

**ENVIRONMENTAL ASSESSMENT
OF THE PROPOSED
DENVER SECURITY OPERATIONS CENTER (DSOC)
“CENTER OF EXCELLENCE”
BUCKLEY AIR FORCE BASE, COLORADO**



460 CES/CEV
660 South Aspen Street, Stop 86
Buckley AFB, CO 80011-9551

JULY 2004

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE JUL 2004		2. REPORT TYPE		3. DATES COVERED 00-00-2004 to 00-00-2004	
4. TITLE AND SUBTITLE Environmental Assessment of the Proposed Denver Security Operations Center (DSOC) 'Center of Excellence' at Buckley Air Force Base, Colorado				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) 460th Civil Engineer Squadron (CES/CEV), 660 South Aspen Street Stop 86, Buckley AFB, CO, 80011				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 216	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

ABBREVIATIONS AND ACRONYMS

$\mu\text{g}/\text{m}^3$	micrograms per cubic meter	LUP	land use plan
140 WG	140th Wing	mg/m^3	milligrams per cubic meter
460 ABW	460th Air Base Wing	MGD	million gallons per day
AADT	average annual daily traffic	MILCON	Military Construction
ACM	Asbestos Containing Materials	MSW	Municipal solid waste
ADF	Aerospace Data Facility	NAAQS	National Ambient Air Quality Standards
AFB	Air Force Base	NEPA	National Environmental Policy Act
AFI	Air Force Instruction	NHPA	National Historic Preservation Act
AFPD	Air Force Policy Directive	NO_2	nitrogen dioxide
AFSPC	Air Force Space Command	NO_x	nitrogen oxides
AICUZ	Air Installation Compatible Use Zone	NESHAPs	National Emission Standards for Hazardous Air Pollutants
ANGB	Air National Guard Bureau	NPDES	National Pollutant Discharge Elimination System
APE	Area of Potential Effect	NRCS	National Resource Conservation Service
AQCR	Air Quality Control Region	NRHP	National Register of Historic Places
BMPs	best management practices	NSR	New Source Review
CAA	Clean Air Act	O_3	ozone
CDPHE	Colorado Department of Public Health and Environment	OSI	Office of Special Investigations
CEQ	Council on Environmental Quality	Pb	lead
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	PCE	perchloroethylene
CFR	Code of Federal Regulations	pCi/L	picoCuries per Liter
CO	carbon monoxide	$\text{PM}_{10/2.5}$	particulate matter particles equal to or less than 10/2.5 microns
COANG	Colorado Air National Guard	ppm	part per million
CWA	Clean Water Act	PSD	Prevention of Significant Deterioration
dB	decibel	RCRA	Resource Conservation and Recovery Act
dBA	A-weighted decibel	ROG	reactive organic gases
DNL	day-night level	ROI	region of influence
DOD	Department of Defense	RTF	Remote Terminal Facility
DSOC	Denver Security Operations Center	SHPO	State Historic Preservation Officer
EA	Environmental Assessment	SIP	State Implementation Plan
EIFS	Economic Impact Forecast System	SO_2	sulfur dioxide
EIS	Environmental Impact Statement	SWPPP	Storm Water Pollution Prevention Plan
EO	Executive Order	TSP	total suspended particles
ERP	Environmental Restoration Program	U.S.	United States
ESA	Endangered Species Act	U.S.C.	U.S. Code
FEMA	Federal Emergency Management Agency	USACE	U.S. Army Corps of Engineers
FIRMs	Flood Insurance Rate Maps	USAF	U.S. Air Force
FONSI	Finding of No Significant Impact	USEPA	U.S. Environmental Protection Agency
ft^2	square feet	USFWS	U.S. Fish and Wildlife Service
FY	Fiscal Year	UST	Underground Storage Tank
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning	VOC	volatile organic compound
IT	Information Technology	yd^3	Cubic yard
kV	kiloVolt		
LBP	lead-based paint		

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

PROPOSED DENVER SECURITY OPERATIONS CENTER (DSOC) CENTER OF EXCELLENCE AT BUCKLEY AIR FORCE BASE, COLORADO

INTRODUCTION

The Department of Defense (DoD) and United States Air Force (USAF) 460th Space Wing (460 SW) proposes to establish a Center of Excellence at Buckley Air Force Base (AFB), Colorado, to revitalize and transform the DoD's technical and scientific information mission responsibilities. The Center of Excellence would be known as the Denver Security Operations Center (DSOC) and would become the focal point for technical analysis, scientific research and reporting. The Proposed Action is in response to a Congressionally Directed Action. The Proposed Action, two alternatives and the No Action Alternative were assessed in an Environmental Assessment (EA) which is incorporated herein by reference.

The DSOC would revitalize and transform DoD's technical and scientific information mission to meet its evolving requirements. In the past, technical and scientific information activities have been dispersed at various locations, which led to duplication of effort and inefficiencies in decision making, mission management and resource allocation. The time-consuming process of relaying large volumes of data to dispersed locations caused unacceptable delays in processing, analysis, research and reporting of technical information vital to DoD's technical customers and national-level decision makers. A consolidated center would improve DoD's ability to rapidly respond to customers' critical information needs. Faster data access and processing would enable DoD to analyze more data, produce better quality reports and quickly meet the critical needs of its customers.

DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action consists of three components. The first component is the staffing of approximately 350 military and civilian personnel at the facility. Staffing would occur gradually over approximately one year. The positions would include both enlisted and officer ranks and civilian equivalents. The distribution of the positions between military and civilian would be variable, as would the distribution between officer and enlisted equivalents.

The second component of the Proposed Action is the construction of 40,000 square feet (ft²) of temporary modular offices to be located west of Building 490. The temporary offices would consist of four modular units of approximately 10,000 ft² each connected to Building 470 by enclosed corridors. Activities within the structure would have no industrial component, only office and computer support. The temporary facilities would not require additional parking but would be able to utilize existing parking. Utility requirements would include potable water, sewage, electricity and communications, all provided from existing connections within the area of Building 490. Emergency power for the temporary buildings would be provided from the existing emergency life safety generators in Building 465. The modular facilities would require some site preparation

involving minor clearing and grading. The facilities would be set on concrete piers and trenching would connect the structures to the existing utilities in the area. Additional sidewalks and paving around the structures would be required. Construction of the modular offices would begin in Fiscal Year 2004 (FY04). Upon the completion of the permanent DSOC in FY08, the modular units would be removed and the site restored to conditions as they existed prior to the construction of the modular units.

The third component of the Proposed Action is the construction of a permanent DSOC of approximately 180,000 ft². The structure would be located north of Building 490. The building would consist of both above- and below-grade portions, each portion one story high. Activities within the structure would have no industrial component beyond regular building heating and chilled water systems, in addition to office and computer support. The building would be of standard steel and concrete construction. Construction of the DSOC would begin in FY07.

SUMMARY OF ALTERNATIVES TO THE PROPOSED ACTION

Alternative 1. Alternative 1 would involve three components: (1) staffing of approximately 350 military and civilian personnel, (2) construction of 40,000-ft² of temporary modular offices west of Building 490, and (3) construction of an approximately 180,000-ft² facility adjacent to the Remote Terminal Facility (RTF) on Buckley AFB.

Alternative 2. Alternative 2 would involve three components: (1) staffing of approximately 350 military and civilian personnel, (2) construction of 40,000-ft² of temporary modular offices west of Building 490, and (3) construction of an approximately 180,000-ft² facility adjacent to the Office of Special Investigations (OSI) facility on Buckley AFB.

No Action Alternative. Under the No Action Alternative, a Center of Excellence would not be located at Buckley AFB and current DoD operations would remain unchanged. There would be no change to existing resource conditions at Buckley AFB. Although the No Action Alternative would not meet DoD mission needs, its inclusion in the EA is prescribed by the Council on Environmental Quality (CEQ) regulations.

SUMMARY OF ANTICIPATED ENVIRONMENTAL IMPACTS ASSOCIATED WITH THE PROPOSED ACTION

Analyses performed in the EA addressed potential effects on air quality, noise, land use, geological resources, water resources, biological resources, cultural resources, socioeconomic and environmental justice, infrastructure, hazardous materials and waste. The analyses indicate that implementing the Proposed Action would have no significant direct, indirect or cumulative effects on the quality of the natural or human environment.

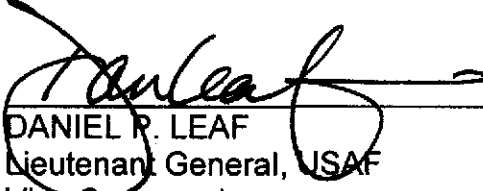
PUBLIC REVIEW AND INTERAGENCY COORDINATION

Based on the provisions set forth in the Proposed Action, all activities were found to comply with the criteria or standards of environmental quality and coordinated with the appropriate Federal, state, and local agencies. The EA and FONSI were made available to Federal, state and local agencies, and the public for a 30-day review period, 3 June – 3 July 2004. Comments were received from the Colorado Department of

Public Health and Environment, the City of Aurora Director of Plans, and the Colorado Department of Transportation. Responses to comments were made by letter to originators and incorporated into the EA and FONSI, as appropriate.

FINDING OF NO SIGNIFICANT IMPACT

Reasonable alternatives were considered. The Proposed Action was found to be the preferred alternative to meet the agency's purposes and needs. After review of the EA prepared in accordance with the requirements of the National Environmental Policy Act, the CEQ regulations and Environmental Impact Analysis Process (32 Code of Federal Regulations 989, as amended), I have determined that the Proposed Action would not have a significant impact on the quality of the human or natural environment. An Environmental Impact Statement (EIS) will not be prepared. This decision has been made after taking into account all submitted information and considering a full range of practical alternatives that would meet project requirements and are within the legal authority of the USAF.



DANIEL R. LEAF
Lieutenant General, USAF
Vice Commander

7 SEP 04

Date

Cover Sheet

Environmental Assessment of the Proposed DSOC “Center Of Excellence” at Buckley Air Force Base, Colorado

Responsible Agencies: Department of Defense (DOD) and the 460th Air Base Wing (460 ABW), Buckley Air Force Base (AFB), Colorado.

Affected Location: Buckley AFB, Colorado.

Report Designation: Environmental Assessment.

Proposed Action: The purpose and need of the Proposed Action is to improve the DOD’s ability to rapidly respond to its customers’ critical information needs by establishing a “Center of Excellence” that would centralize management, decision authority, and mission activities. The Center would revitalize and transform DOD’s technical and scientific mission to meet its evolving requirements. The Proposed Action (preferred alternative) is to establish a “Center of Excellence” at Buckley AFB near the Aerospace Data Facility (ADF) and would involve three components: (1) the staffing of approximately 350 military and civilian personnel at the facility; (2) construction of 40,000 square feet (ft²) of temporary modular offices to be located west of Building 490, and (3) construction of a permanent, approximately 180,000-ft² facility to be located north of Building 490 within the Aerospace Data Facility (ADF) compound. The modular offices would be removed when the permanent facility is completed. The “Center of Excellence” would be known as the Denver Security Operations Center (DSOC). Two alternative locations were identified within Buckley AFB based on an analysis of master planning documents.

Alternative 1. Alternative 1 would involve three components: (1) staffing of approximately 350 military and civilian personnel, (2) construction of 40,000-ft² of temporary modular offices west of Building 490, and (3) construction of an approximately 180,000-ft² facility adjacent to the Remote Terminal Facility (RTF) on Buckley AFB.

Alternative 2. Alternative 2 would involve three components: (1) staffing of approximately 350 military and civilian personnel, (2) construction of 40,000-ft² of temporary modular offices west of Building 490, and (3) construction of an approximately 180,000-ft² facility adjacent to the Office of Special Investigations (OSI) facility on Buckley AFB.

Other Alternatives Considered. Lackland AFB, Texas, and Fort Gordon, Georgia, were also considered as possible locations for the “Center of Excellence,” but were determined to be technically insufficient to meet mission requirements compared to Buckley AFB and, therefore, were not studied in detail.

No Action Alternative. Under the No Action Alternative, a “Center of Excellence” would not be located at Buckley AFB, and current DOD operations would remain unchanged. An Environmental Assessment (EA) has been prepared to evaluate the Proposed Action, Alternatives 1 and 2, and the No Action Alternative. Resources evaluated in the EA are noise, land use, air quality, geological resources, water resources, biological resources, cultural resources, socioeconomics and environmental justice, infrastructure (including storm water and transportation), and hazardous substances (including asbestos, environmental restoration projects, and waste management).

Written comments and inquiries regarding this document should be directed to Ms. Elise Sherva, 460 CES/CEVP, 660 South Aspen Street, Stop 86, Buckley AFB CO 80011-9551, (720) 847-9077.

Privacy Advisory

Your comments on this EA are requested. Letters or other written comments will be addressed in the EA and made available to the public. Any personal information provided will be used only to identify your desire to make a statement during the public comment period or to fulfill requests for copies of the EA or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of the EA. However, only the names of the individuals making comments and specific comments will be disclosed; personal home addresses and phone numbers will not be published in the EA.

**ENVIRONMENTAL ASSESSMENT OF THE
PROPOSED DSOC “CENTER OF EXCELLENCE” AT
BUCKLEY AIR FORCE BASE, COLORADO**

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1. PURPOSE OF AND NEED FOR THE PROPOSED ACTION.....	1-1
1.1 Background	1-1
1.2 Purpose of and Need for the Proposed Action	1-1
1.3 Location of the Proposed Action	1-2
1.4 Summary of Key Environmental Compliance Requirements	1-4
1.4.1 National Environmental Policy Act of 1969	1-4
1.4.2 Integration of Other Environmental Statutes and Regulations.....	1-4
1.5 Interagency Coordination and Community Involvement	1-5
1.6 Introduction to the Organization of this Document.....	1-6
2. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES	2-1
2.1 Introduction	2-1
2.2 Identification of Selection Criteria	2-1
2.3 Detailed Description of the Proposed Action	2-2
2.4 Alternative 1	2-5
2.5 Alternative 2	2-6
2.6 Comparison of Alternatives.....	2-6
2.7 Decision to be Made and Identification of Preferred Alternative	2-8
2.8 No Action Alternative	2-8
2.9 Alternatives Considered but not Analyzed in Detail	2-8
3. AFFECTED ENVIRONMENT	3-1
3.1 Noise.....	3-1
3.1.1 Definition of the Resource	3-1
3.1.2 Existing Conditions	3-2
3.2 Land Use	3-3
3.2.1 Definition of the Resource	3-3
3.2.2 Existing Conditions	3-3
3.3 Air Quality.....	3-6
3.3.1 Definition of the Resource	3-6
3.3.2 Existing Conditions	3-9
3.4 Geological Resources	3-10
3.4.1 Definition of the Resource	3-10
3.4.2 Existing Conditions	3-10
3.5 Water Resources.....	3-13
3.5.1 Definition of the Resource	3-13
3.5.2 Existing Conditions	3-14
3.6 Biological Resources	3-16
3.6.1 Definition of the Resource	3-16
3.6.2 Existing Conditions	3-17
3.7 Cultural Resources	3-26
3.7.1 Definition of the Resource	3-26
3.7.2 Existing Conditions	3-28
3.8 Socioeconomics and Environmental Justice	3-29

3.8.1	Definition of the Resource	3-29
3.8.2	Existing Conditions	3-30
3.9	Infrastructure	3-34
3.9.1	Definition of the Resource	3-34
3.9.2	Existing Conditions	3-35
3.10	Hazardous Substances	3-37
3.10.1	Definition of the Resource	3-37
3.10.2	Existing Conditions	3-38
4.	ENVIRONMENTAL CONSEQUENCES	4-1
4.1	Noise.....	4-1
4.1.1	Proposed Action	4-1
4.1.2	Alternative 1	4-1
4.1.3	Alternative 2	4-1
4.2	Land Use	4-2
4.2.1	Proposed Action	4-2
4.2.2	Alternative 1	4-2
4.2.3	Alternative 2	4-2
4.3	Air Quality.....	4-3
4.3.1	Proposed Action	4-3
4.3.2	Alternative 1	4-8
4.3.3	Alternative 2	4-8
4.4	Geological Resources	4-8
4.4.1	Proposed Action	4-8
4.4.2	Alternative 1	4-8
4.4.3	Alternative 2	4-9
4.5	Water Resources.....	4-10
4.5.1	Proposed Action	4-10
4.5.2	Alternative 1	4-11
4.5.3	Alternative 2	4-12
4.6	Biological Resources	4-13
4.6.1	Proposed Action	4-13
4.6.2	Alternative 1	4-15
4.6.3	Alternative 2	4-16
4.7	Cultural Resources	4-17
4.7.1	Proposed Action	4-17
4.7.2	Alternative 1	4-18
4.7.3	Alternative 2	4-18
4.8	Socioeconomics and Environmental Justice	4-18
4.8.1	Proposed Action and Alternatives	4-19
4.9	Infrastructure	4-21
4.9.1	Proposed Action	4-22
4.9.2	Alternative 1	4-24
4.9.3	Alternative 2	4-24
4.10	Hazardous Substances	4-25
4.10.1	Proposed Action	4-25
4.10.2	Alternative 1	4-27
4.10.3	Alternative 2	4-28
4.11	No Action Alternative	4-28

5.	CUMULATIVE IMPACTS	5-1
5.1	Impact Analysis	5-1
5.2	Unavoidable Adverse Impacts.....	5-6
5.3	Compatibility of the Proposed Action and Alternatives with the Objectives of Federal, Regional, State, and Local Land Use Plans, Policies, and Controls	5-6
5.4	Relationship Between the Short-term Use of the Environment and Long-term Productivity.....	5-6
5.5	Irreversible and Irretrievable Commitments of Resources	5-7
6.	LIST OF PREPARERS.....	6-1
7.	REFERENCES	7-1

APPENDICES:

- A APPLICABLE LAWS, REGULATIONS, POLICIES, AND PLANNING CRITERIA**
- B INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTAL PLANNING
CORRESPONDENCE**
- C AIR FORCE FORM 813**
- D CLEAN AIR ACT AIR EMISSIONS CALCULATIONS**

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1-1. Buckley AFB Vicinity Map.....	1-3
2-1. Operational and Human-Made Constraints on Buckley AFB	2-3
2-2. Buckley AFB Proposed Project Locations	2-4
3-1. Land Uses Around Buckley AFB	3-4
3-2. Existing Land Uses	3-5
3-3. Soil Types at Buckley AFB	3-12
3-4. Wetlands at Buckley AFB	3-27
3-5. Income and Poverty Level for Residents in ROI, Arapahoe County, and the State of Colorado.....	3-32
3-6. Educational Attainment for Residents in ROI, Arapahoe County, and the State of Colorado.....	3-33
3-7. Race of Residents in ROI, Arapahoe County, and the State of Colorado	3-34
3-8. Environmental Restoration Program (ERP) Sites at Buckley AFB.....	3-43

LIST OF TABLES

<u>Table</u>	<u>Page</u>
2-1. Comparison of Environmental Consequences	2-7
3-1. National Ambient Air Quality Standards.....	3-7
3-2. Protected and Sensitive Species Potentially Occurring in Arapahoe County	3-22
3-3. Employment of Residents in ROI, Arapahoe County, and the State of Colorado.....	3-31
3-4. Summary of ERP Sites at Buckley AFB	3-42
4-1. Conformity <i>de minimis</i> Emission Thresholds.....	4-5
4-2. Annual Construction Emissions from the Proposed Action at Buckley AFB	4-7
5-1. Cumulative Effects on Resources	5-4

1. Purpose of and Need for the Proposed Action

1.1 Background

Owned by the city of Denver during the 1930s, Buckley Field was used for training during World War II. After the war, Buckley Field became inactive; much of the equipment and buildings were sold as war surplus, and the bombing range was leased for grazing rights. In 1946, the Colorado Air National Guard (COANG) acquired use of Buckley Field. In September 1947, the Department of the Navy took over Buckley Field and renamed it the Naval Air Station–Denver, Colorado. The Naval Air Station was decommissioned in 1959 and the Base was returned to the COANG for its use (BAFB 2002a). In October 2000, Buckley Air National Guard Base (ANGB) was realigned and became an Air Force Base (AFB) under Air Force Space Command (AFSPC). In October 2001, the 460th Air Base Wing (460 ABW) was established (BAFB 2003a).

The mission of the 460 ABW is to provide combat capability through superior services to air and space, DOD missions and expeditionary forces. There are approximately 8,950 active duty, civilian, and contractor personnel assigned to Buckley AFB (Sherva 2004a).

Tenant activities at Buckley AFB represent a wide range of missions from flight training to support for transient military aircraft and space-related initiatives. The Base is home to diverse missions and military services and components. These include active-duty and Reserve personnel from the U.S. Air Force (USAF), Army, Navy, and Marine Corps. The 140th Wing (140 WG) of the COANG operates and manages the airfield, which is the only operational military airfield in the Denver metropolitan area. The airfield consists of one active runway that is 11,000 feet long and 150 feet wide; the airfield supports aircraft of all commands and services.

1.2 Purpose of and Need for the Proposed Action

The purpose and need for the Proposed Action is to improve the Department of Defense’s (DOD) ability to rapidly respond to its customers’ critical information needs by establishing a “Center of Excellence” (the Center) that would centralize management, decision authority, and mission activities. The Center would revitalize and transform DOD’s technical and scientific information mission to meet its evolving requirements.

In the past, technical and scientific information activities have been dispersed at various locations, which has led to duplication of effort and inefficiencies in decisionmaking, mission management, and resource allocation. The time-consuming process of relaying large volumes of data to dispersed locations has

caused unacceptable delays in processing, analysis, research, and reporting of technical information vital to DOD's technical customers and national-level decisionmakers. A consolidated center would centralize management, decision authority, and mission activity, significantly improving DOD's ability to rapidly respond to customers' critical information needs. Faster data access and processing would enable the Center to analyze more data, produce better quality reports, and quickly meet the critical needs of its customers.

This Environmental Assessment (EA) analyzes and documents potential environmental consequences associated with the proposed activities. If the analyses presented in the EA indicate that implementation of the Proposed Action would not result in significant environmental or socioeconomic impacts, then a Finding of No Significant Impact (FONSI) will be prepared. If significant environmental issues result that cannot be mitigated to insignificance, an Environmental Impact Statement (EIS) will be prepared.

1.3 Location of the Proposed Action

Buckley AFB is a 3,283-acre parcel of flat to rolling uplands in the eastern portion of the metropolitan Denver, Colorado area. The Base is approximately three miles east of Interstate 225 and 10 miles southwest of Denver International Airport. The majority of the Base's land is currently undeveloped (BAFB 2002a). However, there are numerous Capital Improvement Projects planned at Buckley AFB (BAFB 2002c). These planned projects are discussed further in Section 5 of this EA.

Buckley AFB is on the eastern edge of urbanized portions of the city of Aurora in Arapahoe County, Colorado (Figure 1-1). Encompassing 39,991 acres (136 square miles), Aurora is the second largest city in the Denver metropolitan area and the third largest city in the state. Approximately 52 percent of the total acreage comprising the city of Aurora is zoned residential. Land use south and southwest of the Base is predominantly residential. The remaining 48 percent of Aurora's total acreage is comprised of industrial land and open space. Land use to the north and northwest of the Base consists primarily of light industry, commercial businesses, and open space. The areas northeast, east, and southeast of the Base are primarily open space. The open space is used either as agricultural land or as part of the Plains Conservation Center (BAFB 2002a).

Between 1986 and 1996, the city of Aurora increased its population by 24,300 people, an average annual population growth of 1.8 percent. The construction of Highway E-470, one-half mile to the east of the Base, and the extension of Jewell Avenue toward the east (to connect with Highway E-470 north and south of the Base, respectively) has fostered an increase in development and population in the direction of the Base (BAFB 2002a).

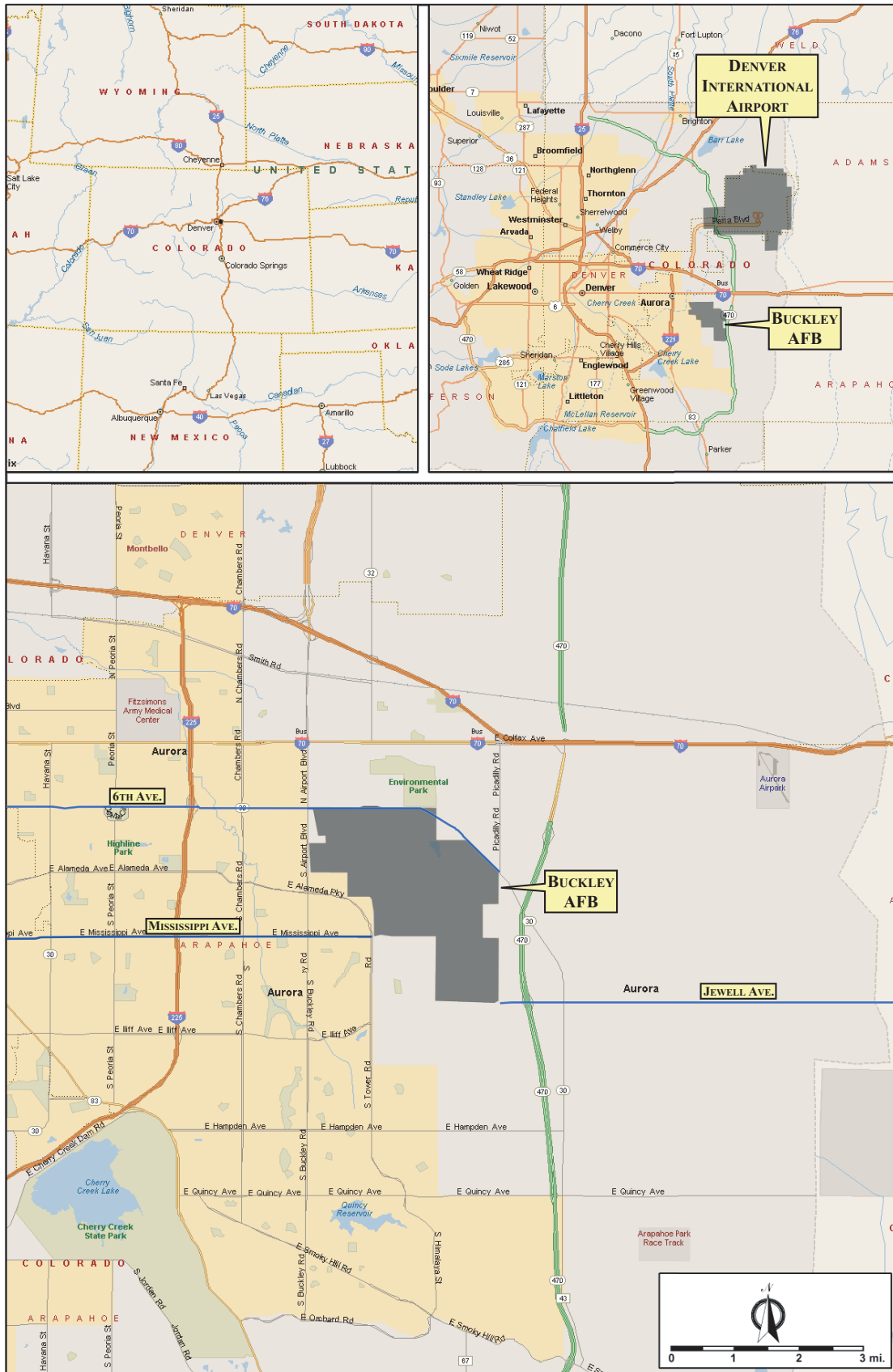


Figure 1-1. Buckley AFB Vicinity Map

1.4 Summary of Key Environmental Compliance Requirements

1.4.1 National Environmental Policy Act of 1969

The National Environmental Policy Act of 1969, commonly known as NEPA, is a Federal statute requiring the identification and analysis of potential environmental impacts of proposed Federal actions before those actions are taken. NEPA also established the Council on Environmental Quality (CEQ) that is charged with the development of implementing regulations and ensuring agency compliance with NEPA. CEQ regulations mandate that all Federal agencies use a systematic interdisciplinary approach to environmental planning and the evaluation of actions that might affect the environment. This process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action. The intent of NEPA is to protect, restore, or enhance the environment through well-informed Federal decisions.

The process for implementing NEPA is codified in Title 40 of the Code of Federal Regulations (CFR) Parts 1500-1508, *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*. The CEQ was established under NEPA to implement and oversee Federal policy in this process. CEQ regulations specify that the following must be accomplished when preparing an EA:

- Briefly provide evidence and analysis for determining whether to prepare an EIS or a FONSI.
- Aid in an agency's compliance with NEPA when an EIS is unnecessary.
- Facilitate preparation of an EIS when one is necessary.

Air Force Policy Directive (AFPD) 32-70, *Environmental Quality*, states that the USAF will comply with applicable Federal, state, and local environmental laws and regulations, including NEPA. The USAF implementing regulation for NEPA is *The Environmental Impact Analysis Process*, Title 32 CFR Part 989, as amended.

1.4.2 Integration of Other Environmental Statutes and Regulations

To comply with NEPA, the planning and decisionmaking process for actions proposed by Federal agencies involves a study of other relevant environmental statutes and regulations. The NEPA process, however, does not replace procedural or substantive requirements of other environmental statutes and regulations. It addresses them collectively in the form of an EA or EIS, which enables the decisionmaker to have a comprehensive view of major environmental issues and requirements associated with the Proposed Action. According to CEQ regulations, the requirements of NEPA must be integrated “with other planning and environmental review procedures required by law or by agency so that all such

procedures run concurrently rather than consecutively.” Resources that will be analyzed in the EA were those identified as being potentially affected by the Proposed Action, and include applicable critical elements of the human environment whose review is mandated by Executive Order (EO), regulation, or policy (see Appendix A).

1.5 Interagency Coordination and Community Involvement

NEPA requirements help ensure that environmental information is made available to the public during the decisionmaking process and prior to actions being taken. The premise of NEPA is that the quality of Federal decisions will be enhanced if proponents provide information to the public and involve the public in the planning process. CEQ regulations implementing NEPA specifically state, “There shall be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to proposed actions. This process shall be termed scoping.” The Intergovernmental Coordination Act and EO 12372, *Intergovernmental Review of Federal Programs*, require Federal agencies to cooperate with and consider state and local views in implementing a Federal proposal. Title 32 CFR Part 989 also requires USAF to implement a process known as Interagency and Intergovernmental Coordination for Environmental Planning (IICEP), which is used for the purpose of agency coordination and implements scoping requirements.

Through the IICEP process, DOD and the 460 ABW, Buckley AFB (hereafter referred to as the Responsible Agencies) notified relevant Federal, state, and local agencies of the Proposed Action and requested input on environmental concerns they might have specific to the action. The IICEP process also provides the Responsible Agencies the opportunity to cooperate with and consider state and local views in implementing this Federal proposal. Agency responses have been incorporated into the analysis of potential environmental impacts performed as part of the EA. The Responsible Agencies are coordinating with agencies such as U.S. Environmental Protection Agency (USEPA); U.S. Fish and Wildlife Service (USFWS); State Historic Preservation Office (SHPO); and other Federal, state, and local agencies. Appendix B of the EA includes a copy of the IICEP letter that was mailed to the agencies for this action and the IICEP distribution list.

A Notice of Availability for the EA and FONSI was published in the *Aurora Sentinel* and the *Denver Post* on June 3, 2004. This was done to solicit comments on the Proposed Action and involve the local community in the decisionmaking process. In addition, a Community Advisory Group has been established for Buckley AFB and members will be notified of the availability of the EA. Comments from the public and other Federal, state, and local agencies have been incorporated into the EA and are included in Appendix B.

1.6 Introduction to the Organization of this Document

The EA is organized into seven sections. Section 1 contains background information on Buckley AFB, a statement of the purpose of and need for the Proposed Action, the location of the Proposed Action, a listing of applicable regulatory requirements, and an introduction to the organization of the EA. Section 2 provides a detailed description of the Proposed Action, alternatives to the Proposed Action, a comparison of alternatives, alternatives considered but not analyzed in detail, a description of the No Action Alternative, and a description of the decision to be made. Section 3 contains a general description of the biophysical resources and baseline conditions that potentially could be affected by the Proposed Action, Alternatives, or the No Action Alternative. Section 4 presents an analysis of the direct and indirect environmental effects of the Proposed Action and Alternatives on Buckley AFB and the surrounding area, and Section 5 presents an analysis of the potential cumulative effects of the Proposed Action and Alternatives. Section 6 lists the preparers of the EA, and Section 7 lists the sources of information used in the preparation of the document. Appendix A includes a brief description of laws, regulations, and other requirements that are relevant to the Proposed Action and are considered in the EA. Appendix B includes a copy of IICEP letters, distribution list, and agency responses. Public comments from the Notice of Availability have been included in the final document. Appendix C includes Air Force Form 813, which records environmental considerations for the proposed project. Appendix D contains the Clean Air Act (CAA) air emissions calculations for the Proposed Action and alternatives.

The EA evaluates the Proposed Action, Alternatives 1 and 2, and the No Action Alternative. Resources analyzed are noise, land use, air quality, geological resources, water resources, biological resources, cultural resources, socioeconomics and environmental justice, infrastructure (including storm water and transportation), and hazardous substances (including asbestos, environmental restoration projects, and waste management).

While this EA provides information with which to make better decisions about proposed actions, it does not imply project approval or authorization, which is obtained through the 460 ABW Facilities Board.

2. Description of the Proposed Action and Alternatives

2.1 Introduction

This section describes the Proposed Action, Alternatives 1 and 2, the No Action Alternative, and other alternatives considered by the Responsible Agencies but eliminated from detailed analysis. This section also describes the process used to objectively identify the range of reasonable alternatives that would be carried forward for detailed environmental analysis, as well as the reasoning for the elimination of alternatives.

2.2 Identification of Selection Criteria

In an effort to satisfy the purpose and need for the Proposed Action, several criteria were developed to compare and contrast alternative ways of fulfilling the objectives of the Proposed Action in accordance with 32 CFR 989.8(c). The proposed Center would require a unique Information Technology (IT) infrastructure and rapid access to required data. Key selection criteria include access to major communication nodes; large volumes of data for scientific research, analysis, and training; robust information processing, analysis, relay, and test capabilities; a large cadre of technically trained personnel; and facilities capable of providing technical training and retraining to maintain and increase the technical excellence of the workforce.

Several sites were considered for the location of the “Center of Excellence,” including Lackland AFB, Texas; Fort Gordon, Georgia; and Buckley AFB. Buckley AFB has the advantage of being the home of the Aerospace Data Facility (ADF)—a DOD information-processing center. This relay hub forwards large volumes of data to remote locations that perform various aspects of DOD’s technical and scientific mission. The existing information-processing, analysis, and research infrastructure at the ADF is robust and can most easily be extended to satisfy the Center’s requirement for large-scale information processing. As a relay hub, the ADF meets the Center’s requirement to be able to move required data and analysis and research results. A large cadre of technical and scientific expertise is also available at Buckley AFB and within Denver’s high technology private sector. Additionally, the existing technical training capabilities at the ADF can meet the Center’s technical training requirements in the near term while the Center focuses on development of advance training capabilities to meet tomorrow’s needs.

Locating the Center in the vicinity of the ADF relay facility at Buckley AFB satisfies critical requirements that Lackland AFB and Fort Gordon could not satisfy. After evaluating existing infrastructure, communications, access to data, availability of scientific and technical expertise, and

technical training capabilities and facilities, Buckley AFB was identified as the preferred alternative. Three locations were identified within Buckley AFB based on the building footprint, available space, availability of existing infrastructure to include a communications link to the ADF, and a 300-foot antiterrorism/force protection buffer from Buckley AFB's perimeter fence. Suitable sites were identified through an analysis of maps prepared by Buckley AFB Community Planning staff. Many potentially suitable undeveloped areas on the Base are already proposed for development, and therefore not available. When combined with operational and man-made constraints, the Base has a limited amount of developable areas. Figure 2-1 shows operational and man-made constraints for proposed facilities on Buckley AFB.

2.3 Detailed Description of the Proposed Action

In response to a Congressionally Directed Action and evolving national security requirements, DOD proposes to establish a "Center of Excellence" to revitalize and transform the Department's technical and scientific information mission responsibilities. This Center would become the focal point for technical analysis, scientific research, and reporting. Establishing the Center at Buckley AFB would require the physical relocation and consolidation of key technical capabilities and scientific expertise, currently operating at various locations, to one site co-located with key enabling elements. The Center is considered a crucial pathfinder in DOD's ongoing transformation initiatives.

The Proposed Action consists of three components. The first component is the staffing of approximately 350 military and civilian personnel at the facility. The positions would include both enlisted and officer ranks and civilian equivalents. The distribution of the positions between military and civilian would be variable, as would the distribution between officer and enlisted equivalents. While it is possible that some of the people taking assignments currently reside in the area, it is assumed that backfilling their current positions would require additional personnel moving into the area. Therefore, for the purpose of this EA, it is assumed that all 350 personnel would be new to the area. Personnel arriving at the site under this Proposed Action would not arrive in a single unit but would arrive over a period of more than one year.

The second component of the Proposed Action is the construction of 40,000 square feet (ft²) of temporary modular offices to be located west of ADF Building 490 (see Figure 2-2). The temporary offices would consist of four modular units of approximately 10,000 ft² each connected to Building 470 by enclosed corridors. Activities within the structure would have no industrial component, only office and computer support. The temporary facilities would not require additional parking but would

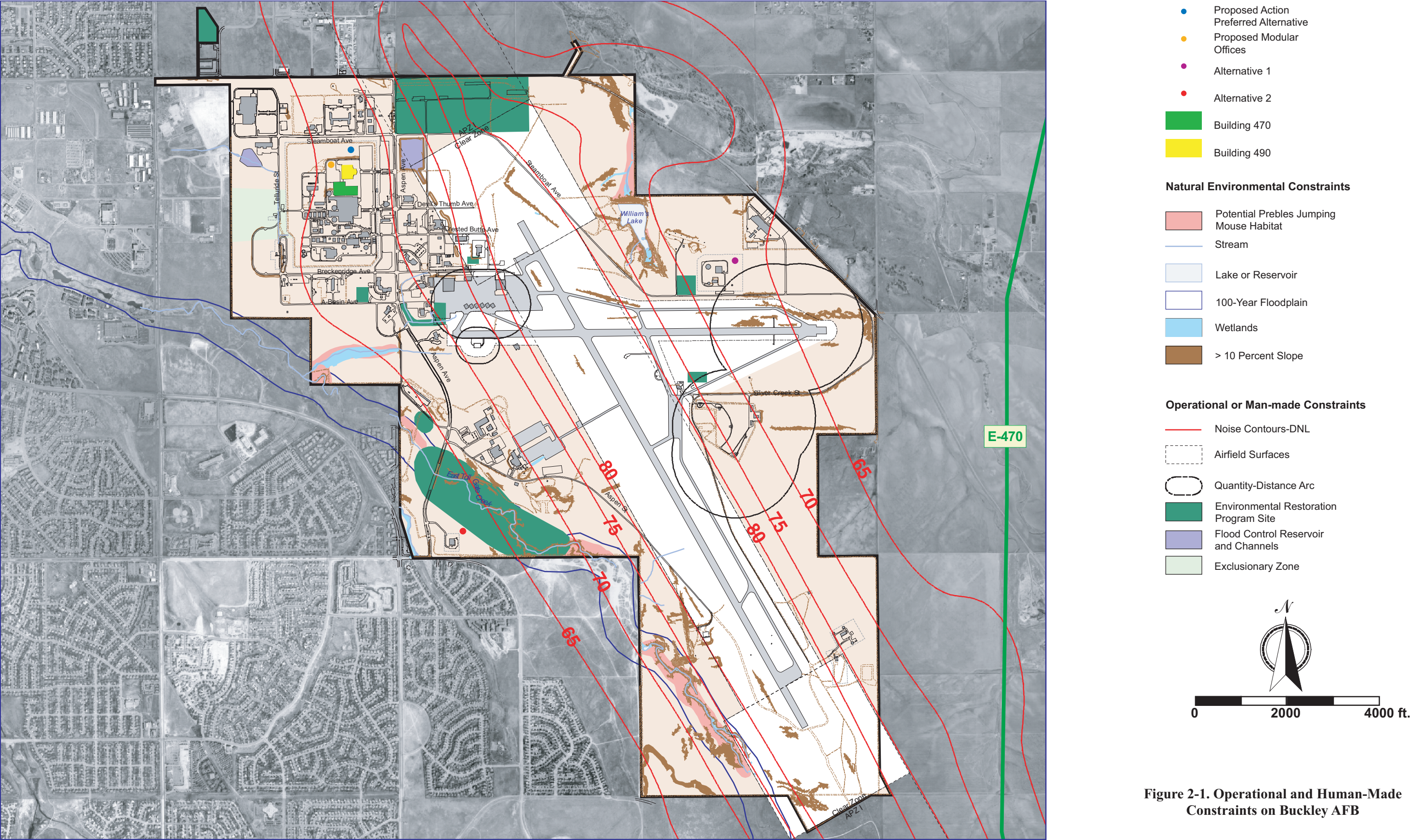


Figure 2-1. Operational and Human-Made Constraints on Buckley AFB

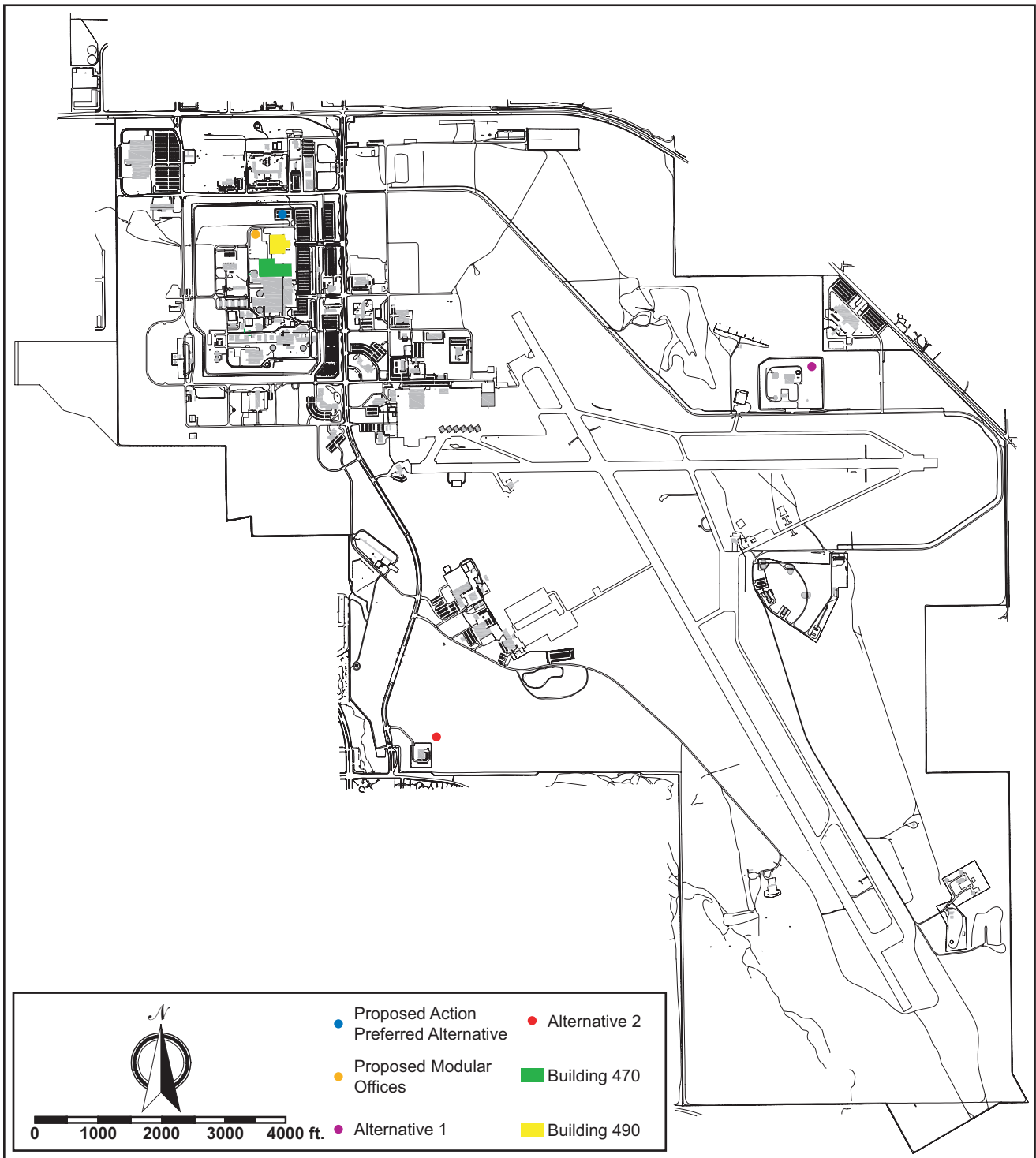


Figure 2-2. Buckley AFB Proposed Project Locations

be able to utilize existing parking. Utility requirements would include potable water, sewage, electricity, natural gas, and communications, all provided from existing connections within the area of Building 490. Emergency power for the temporary buildings would be provided from the existing emergency life safety generators in Building 465. The modular facilities would require some site preparation involving minor clearing and grading. The facilities would be set on concrete piers and trenching would connect the structures to the existing utilities in the area. Additional sidewalks and paving around the structures would be required. Construction of the modular offices would begin in Fiscal Year (FY) 2004. Upon the completion of the permanent Center military construction (MILCON) facility in FY 2008, the modular units would be removed and the site restored to conditions as they existed prior to the construction of the modular units.

The third component of the Proposed Action is the construction of a permanent Center of approximately 180,000 ft². The structure would be located north of Building 490. The building would consist of both above- and below-grade portions, each portion one story high. Activities within the structure would have no industrial component beyond regular building heating and chilled water systems, in addition to office and computer support. The building would be of standard steel and concrete construction. The structure might require its own life safety generator with an attached aboveground storage tank. Other utilities would be provided from the site, and would be connected through trenching. Additional parking, compound roadways, and sidewalks would be required. If approval is given to locate the Center at Buckley AFB, it would be known as the Denver Security Operations Center (DSOC). Construction of the DSOC would begin in FY 2007.

Establishing the Center at Buckley AFB adjacent to the existing ADF infrastructure was selected as the Preferred Alternative because it would allow the DOD to satisfy the Congressionally Directed Action in the shortest amount of time, most efficiently and effectively, and provide the most benefit to the nation at the least cost.

2.4 Alternative 1

Alternative 1 includes the same first two components as the Proposed Action. Under Alternative 1, the third component—the permanent DSOC Facility—would be located near the Remote Terminal Facility (RTF) on Buckley AFB. The alternative location was identified based on building footprint and set-back requirements, availability of communications infrastructure, and an analysis of maps prepared by Buckley AFB Community Planning staff. The structure would be located northeast of the RTF. The permanent DSOC facility would consist of both above- and below-grade portions, each portion one story high. Activities within the structure would have no industrial component beyond regular building heating and

chilled water systems, and office and computer support. The building would be of standard steel and concrete construction. The structure would require its own life safety generator with attached aboveground storage tank. Other utilities would be provided from tie-ins around the RTF, and would be connected through trenching. Additional parking, compound roadways, and sidewalks would be required.

2.5 Alternative 2

Alternative 2 is similar to the Proposed Action and Alternative 1 except that the permanent DSOC facility would be located northeast of the Office of Special Investigations (OSI) facility on Buckley AFB. The alternative location was identified based on building footprint and set-back requirements, and an analysis of maps prepared by Buckley AFB Community Planning staff. The structure would lie between the OSI facility and the floodplain. The permanent DSOC facility would consist of both above- and below-grade portions, each portion one story high. Activities within the structure would have no industrial component beyond regular building heating and chilled water systems, and office and computer support. The building would be of standard steel and concrete construction. The structure would require its own life safety generator with attached aboveground storage tank. Additional parking, compound roadways, and sidewalks would be required. Other utilities would be provided from tie-ins around the OSI, and would be connected through trenching. Alternative 2 would also require a communications upgrade to facilitate the transfer of data from the ADF. This would require the installation of transmission cables approximately 2 miles long. Utilities would be coordinated and routed to avoid trenching through the floodplain, East Toll Gate Creek, and the former Base landfill. Utilities might be hung from the bridge to avoid the floodplain, creek, and former landfill. Every effort would be made to avoid disturbing the landfill while running utilities, but if breeching the cap is necessary, it would be completed after an engineered analysis of the cap and with controls to prevent infiltration to the landfill and release of materials, as well as safe practices for construction workers. Utilities would run along Aspen Avenue and cross A-Basin Avenue, Breckenridge Avenue, and several building entrance roads and parking areas.

2.6 Comparison of Alternatives

Table 2-1 compares the environmental effects of the Proposed Action, Alternatives 1 and 2, and the No Action Alternative.

Table 2-1. Comparison of Environmental Consequences

Environmental Resource Areas	Proposed Action	Alternative 1	Alternative 2	No Action Alternative
Noise	Short-term – Negligible Adverse	Short-term – Negligible Adverse	Short-term – Negligible Adverse	Short-term – No Impacts
	Long-term – Negligible Adverse	Long-term – Negligible Adverse	Long-term – Minor Adverse	Long-term – No Impacts
Land Use	Short-term – No Impacts	Short-term – No Impacts	Short-term – Negligible Adverse	Short-term – No Impacts
	Long-term – No Impacts	Long-term – No Impacts	Long-term – Minor Adverse	Long-term – No Impacts
Air Quality	Short-term – Negligible Adverse	Short-term – Negligible Adverse	Short-term – Negligible Adverse	Short-term – No Impacts
	Long-term – Negligible Adverse	Long-term – Negligible Adverse	Long-term – Negligible Adverse	Long-term – No Impacts
Geological Resources	Short-term – Negligible Adverse	Short-term – Negligible Adverse	Short-term – Negligible Adverse	Short-term – No Impacts
	Long-term – Negligible Adverse	Long-term – Negligible Adverse	Long-term – Negligible Adverse	Long-term – No Impacts
Water Resources	Short-term – No Impacts	Short-term – No Impacts	Short-term – No Impacts	Short-term – No Impacts
	Long-term – Negligible Adverse Impacts	Long-term – Negligible Adverse Impacts	Long-term – Negligible Adverse Impacts	Long-term – No Impacts
Biological Resources	Short-term – Minor Adverse	Short-term – Minor Adverse	Short-term – Minor Adverse	Short-term – No Impacts
	Long-term – Minor Adverse	Long-term – Minor Adverse	Long-term – Substantial Adverse	Long-term – No Impacts
Cultural Resources	Short-term – No Impacts	Short-term – No Impacts	Short-term – No Impacts	Short-term – No Impacts
	Long-term – No Impacts	Long-term – No Impacts	Long-term – No Impacts	Long-term – No Impacts
Socioeconomics and Environmental Justice	Short-term – Minor Beneficial	Short-term – Minor Beneficial	Short-term – Minor Beneficial and Adverse	Short-term – No Impacts
	Long-term – Minor Beneficial	Long-term – Minor Beneficial	Long-term – Minor Beneficial and Adverse	Long-term – No Impacts
Infrastructure (transportation and utilities)	Short-term – Negligible Adverse	Short-term – Negligible Adverse	Short-term – Negligible Adverse	Short-term – No Impacts
	Long-term – No Impacts	Long-term – Negligible Adverse	Long-term – Negligible Adverse	Long-term – No Impacts
Hazardous Substances	Short-term – No Impacts	Short-term – No Impacts	Short-term – No Impacts	Short-term – No Impacts
	Long-term – No Impacts	Long-term – No Impacts	Long-term – No Impacts	Long-term – No Impacts

2.7 Decision to be Made and Identification of Preferred Alternative

The Responsible Agencies would make one of the following decisions:

- Implement the Proposed Action, including locating the DSOC north of the ADF Building 490
- Implement Alternative 1, including locating the DSOC adjacent to the RTF
- Implement Alternative 2, including locating the DSOC north of the OSI
- Not implement the Proposed Action (No Action Alternative)

The Preferred Alternative is the implementation of the Proposed Action as selected by the Responsible Agencies.

2.8 No Action Alternative

Under the No Action Alternative, a “Center of Excellence” would not be located at Buckley AFB, and current DOD operations would remain unchanged. There would be no change to existing resource conditions at Buckley AFB. The No Action Alternative would not address DOD mission needs. However, inclusion of the No Action Alternative is prescribed by the CEQ regulations and was carried forward for analysis in the EA.

2.9 Alternatives Considered but not Analyzed in Detail

Several sites were considered for the location of the “Center of Excellence,” including Lackland AFB, Texas; and Fort Gordon, Georgia. Lackland AFB and Fort Gordon were found to have lower technical capabilities in terms of data quantity and data quality compared to Buckley AFB. Increasing the data processing and relay capabilities at the other two sites would require substantially higher development costs. Replicating the enabling infrastructure within the Buckley AFB compound, and training or relocating a technical workforce comparable to that currently resident at or near Buckley AFB was found to be cost prohibitive.

3. Affected Environment

3.1 Noise

3.1.1 Definition of the Resource

Physically, there is no distinction between sound and noise. Sound is a sensory perception and the complex pattern of sound waves is labeled noise, music, speech, and the like. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Human response to noise varies according to the source type, characteristics of the noise source, distance between source and receptor, receptor sensitivity, and time of day.

Sound is measured with instruments that record instantaneous sound levels in decibels (dB). A-weighted sound level measurements (dBA) are used to characterize sound levels that can be sensed by the human ear. “A-weighted” denotes the adjustment of the frequency content of a noise event to represent the way in which the average human ear responds to the noise event.

Noise Criteria and Regulations. Federal and local governments have established noise guidelines and regulations for the purpose of protecting citizens from potential hearing damage and from various other adverse physiological, psychological, and social effects associated with noise. The following paragraphs describe the guidelines and regulations that are relevant to the project.

According to USAF, Federal Aviation Administration, and U.S. Department of Housing and Urban Development criteria, residential units and other noise-sensitive land uses are “clearly unacceptable” in areas where the noise exposure exceeds a day-night level (DNL) of 75 dBA, “normally unacceptable” in regions exposed to noise between the DNL of 65 to 75 dBA, and “normally acceptable” in areas exposed to noise where the DNL is 65 dBA or less. The Federal Interagency Committee on Urban Noise developed land use compatibility guidelines for noise in terms of DNL (USDOT 1980). DNL is the metric used by the USAF in determining noise impacts of military airfield operations for land use planning. USAF land use compatibility guidelines (relative to DNL values) are documented in the Air Installation Compatible Use Zone (AICUZ) Program Handbook (USAF 1999). Five noise zones are used in AICUZ studies to identify noise impacts from aircraft operations. These noise zones range from a DNL of 65 to 80 dBA and above. For example, it is recommended that no residential uses, such as homes, multifamily dwellings, dormitories, hotels, and mobile home parks, be located where the noise is expected to exceed a DNL of 65 dBA. If noise-sensitive structures are located in areas within a DNL range of 65 to 75 dBA, these structures should be designed to reduce interior noise by 25 to 30 dBA. Some commercial and industrial

uses where the noise level exceeds a DNL of 65 dBA are considered acceptable. For outdoor activities, USEPA recommends a maximum DNL of 55 dBA in order that the general population will not be at risk from any of the effects of noise (USEPA 1974).

3.1.2 Existing Conditions

Aircraft. The noise associated with activities at Buckley AFB is characteristic of the noise associated with flying operations at most military flying facilities. In addition, maintenance and shop operations for aircraft are conducted at Buckley AFB. These sound-producing activities are referred to as the ambient noise environment. For Buckley AFB, it is during periods of aircraft flight activity that the ambient noise environment is affected. The Buckley AFB noise signature is dominated by the F-16 Fighting Falcons operated by the COANG.

Nearly all studies on the compatibility of residential development and aircraft noise recommend that no residential uses be located in noise zones above an average DNL of 75 dBA. Usually, there are no recommended restrictions in noise zones below a DNL of 65 dBA. Between a DNL of 65 and 75 dBA, there is currently no consensus.

As expected, the highest average sound levels (DNL of 70 dBA and above) occur adjacent to the runways and parallel taxiway. Sound levels exceeding DNL of 65 dBA extend beyond the airfield and consume the majority of Buckley AFB. The DNL of 65 dBA contour extends approximately one mile southeast and one mile northwest over Aurora, Colorado, in Arapahoe County. Most of the Base, including the new Wing Headquarters facility is within the DNL of 65 dBA contour (BAFB 2003a).

As part of its standard aircraft operating procedures, the 460 ABW attempts to minimize noise disturbances to the civilian community. On the Base, land use planning and facility siting are compatible with airfield operations and related noise levels. With limited sites for visiting officer and airmen quarters, Base planners ensure that noise attenuation features are included in the design of facilities to be constructed in high noise areas, thereby reducing building interior noise to acceptable levels. Noise from aircraft operations is not expected to constrain future development at Buckley AFB.

Construction. Construction activities can cause considerable noise emissions. A variety of sounds come from cranes, cement mixers, welding, hammering, boring, and other work processes. Construction equipment and building operations are often poorly silenced, but quickly become a part of the ambient noise levels heard everyday.

3.2 Land Use

3.2.1 Definition of the Resource

The term “land use” refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. In many cases, land use descriptions are codified in local zoning laws. There is, however, no nationally recognized convention or uniform terminology for describing land use categories. As a result, the meanings of various land use descriptions, labels, and definitions vary among jurisdictions.

Natural conditions of property can be described or categorized as unimproved, undeveloped, conservation or preservation area, and natural or scenic area. There is a wide variety of land use categories resulting from human activity. Descriptive terms often used include residential, commercial, industrial, agricultural, institutional, and recreational.

Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. Compatibility among land uses fosters the societal interest of obtaining the highest and best uses of real property. Tools supporting land use planning include written master plans/management plans and zoning regulations. In appropriate cases, the locations and extent of proposed actions need to be evaluated for their potential effects on project site and adjacent land uses. The foremost factor affecting a proposed action in terms of land use is its compliance with any applicable land use or zoning regulations. Other relevant factors include matters such as existing land use at the project site, the types of land uses on adjacent properties and their proximity to a proposed action, the duration of a proposed activity, and its “permanence.”

3.2.2 Existing Conditions

Land use northwest of the Base is primarily light industrial, and to the north, light industrial use is mixed with pockets of undeveloped land. Land use southeast of the Base is primarily agricultural land or part of the Plains Conservation Center. To the south and southwest, land use is mainly residential or undeveloped land designated to undergo residential expansion (Figure 3-1). In 2000, the E-470 Corridor Zoning Regulations were adopted by the city of Aurora to enable residential and commercial development within this high-growth corridor in accordance with the Aurora Comprehensive Plan. The E-470 Corridor District includes 10 subareas dedicated to specific purposes. In general, the subareas northeast and southeast of Buckley AFB are designated to allow for medium density residential development and open space, with regional activity centers and light industrial areas throughout. The area directly east of Buckley AFB is zoned as a Research and Development (R&D) area. (BAFB 2003b).

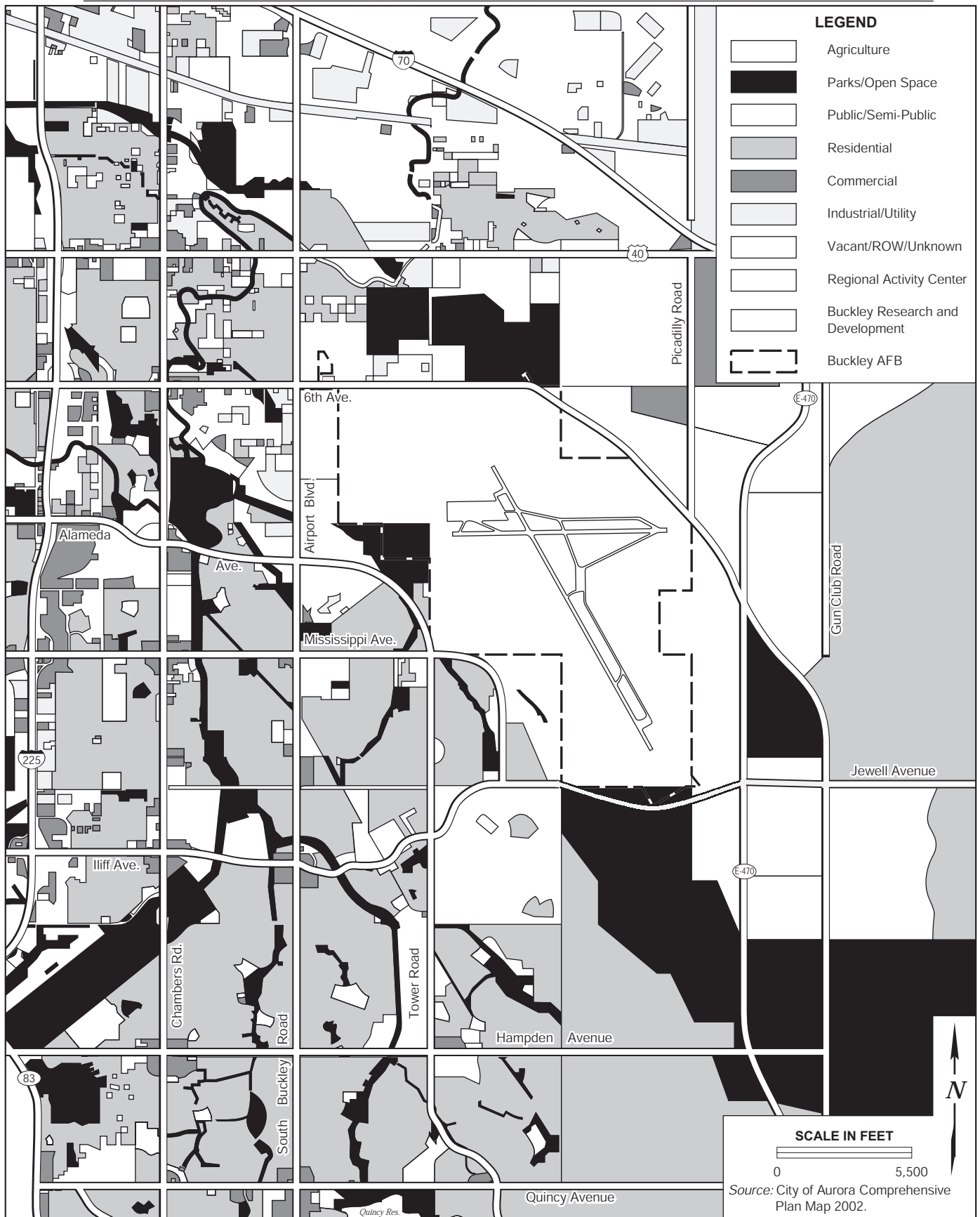


Figure 3-1. Land Uses Around Buckley AFB

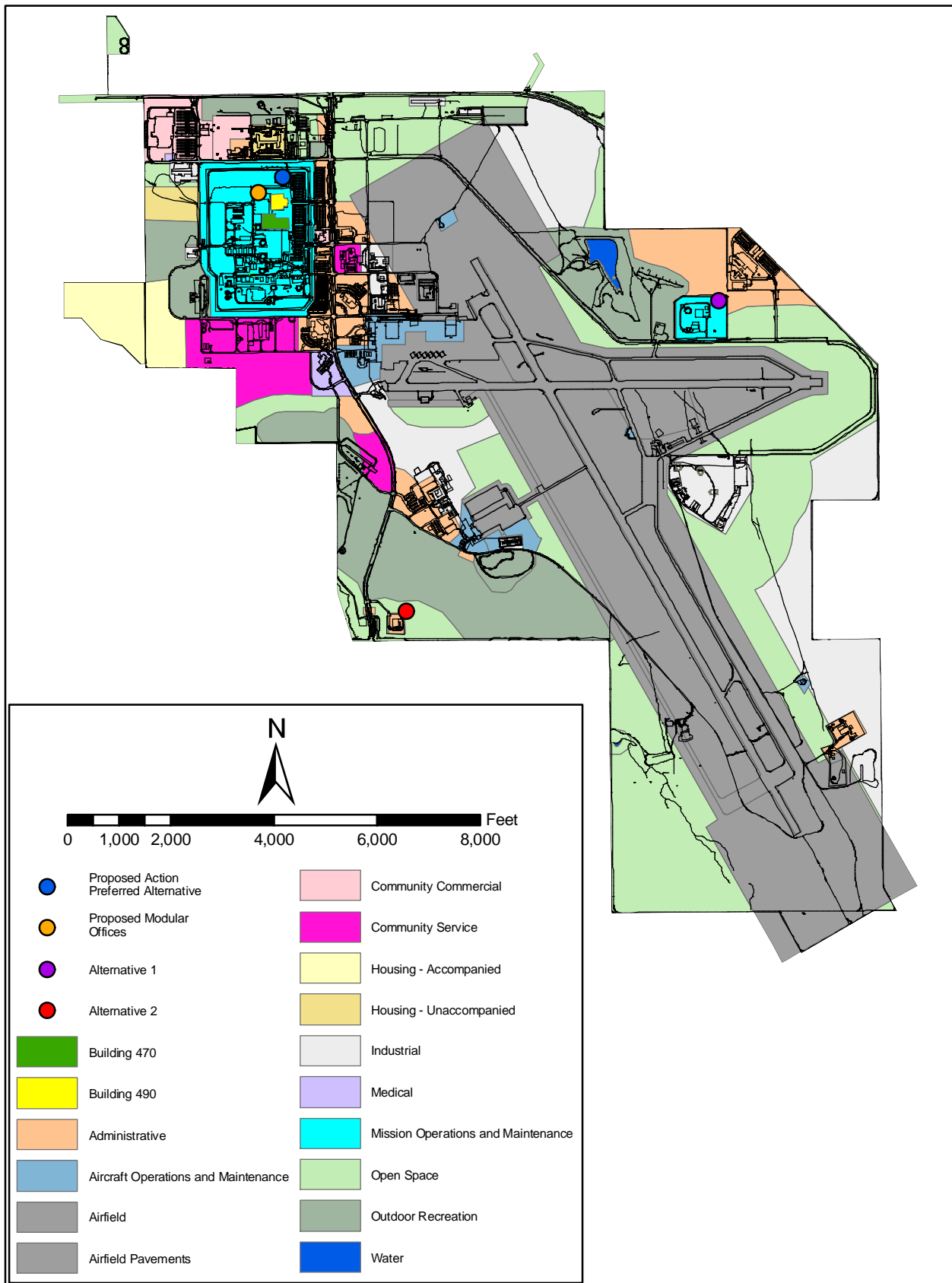


Figure 3-2. Existing Land Uses

There are 14 categories of land use at Buckley AFB (Figure 3-2), consisting of aircraft operations and maintenance (1.6 percent of Base), mission operations and maintenance (5.1 percent), airfield and airfield pavements (35.9 percent), administrative (6.1 percent), community commercial (1.5 percent), community service (2.7 percent), medical (0.4 percent), housing (accompanied and unaccompanied) (2.8 percent), industrial (10.6 percent), outdoor recreation (11.4 percent), open space (21.6 percent), and water (0.2 percent).

The Proposed Action would be on lands designated as mission operations and maintenance. The property associated with Alternative 1 is primarily classified as administrative and mission operations and maintenance. Some lands designated as open space might also be impacted. The property associated with Alternative 2 is classified as administrative, open space, and outdoor recreation; most construction under this alternative would occur in the open space and outdoor recreation land use.

3.3 Air Quality

3.3.1 Definition of the Resource

In accordance with Federal CAA requirements, the air quality in a given region or area is measured by the concentration of various pollutants in the atmosphere. The measurements of these “criteria pollutants” in ambient air are expressed in units of parts per million (ppm) or in units of micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). The air quality in a region is a result not only of the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography, the size of the topological “air basin,” and the prevailing meteorological conditions.

The CAA directed USEPA to develop, implement, and enforce strong environmental regulations that would ensure clean and healthy ambient air quality. To protect public health and welfare, USEPA developed numerical concentration-based standards, or National Ambient Air Quality Standards (NAAQS), for pollutants that have been determined to impact human health and the environment. USEPA established both primary and secondary NAAQS under the provisions of the CAA. NAAQS are currently established for six criteria air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (including particulates equal to or less than 10 microns in diameter (PM_{10}) and particulate matter equal to or less than 2.5 microns in diameter ($\text{PM}_{2.5}$), and lead (Pb). The primary NAAQS represent maximum levels of background air pollution that are considered safe, with an adequate margin of safety to protect public health. Secondary NAAQS represent the maximum pollutant concentration necessary to protect vegetation, crops, and other public resources along with maintaining visibility standards. Table 3-1 presents the primary and secondary NAAQS that apply to the air quality in Colorado.

Although O₃ is considered a criteria air pollutant and is measurable in the atmosphere, it is not often considered a regulated air pollutant when calculating emissions because O₃ is typically not emitted directly from most emissions sources. Ozone is formed in the atmosphere by photochemical reactions

Table 3-1. National Ambient Air Quality Standards

Pollutant	Standard Value		Standard Type
Carbon Monoxide (CO)			
8-hour Average	9 ppm	(10 mg/m ³) ²	Primary & Secondary
1-hour Average	35 ppm	(40 mg/m ³) ²	Primary
Nitrogen Dioxide (NO ₂)			
Annual Arithmetic Mean	0.053 ppm	(100 µg/m ³) ²	Primary & Secondary
Ozone (O ₃)			
1-hour Average ¹	0.12 ppm	(235 µg/m ³) ²	Primary & Secondary
8-hour Average ¹	0.08 ppm	(157 µg/m ³) ²	Primary & Secondary
Lead (Pb)			
Quarterly Average		1.5 µg/m ³	Primary & Secondary
Particulate < 10 micrometers (PM ₁₀)			
Annual Arithmetic Mean		50 µg/m ³	Primary & Secondary
24-hour Average		150 µg/m ³	Primary & Secondary
Particulate < 2.5 micrometers (PM _{2.5})			
Annual Arithmetic Mean		15 µg/m ³	Primary & Secondary
24-hour Average		65 µg/m ³	Primary & Secondary
Sulfur Dioxide (SO ₂)			
Annual Arithmetic Mean	0.03 ppm	(80 µg/m ³) ²	Primary
24-hour Average	0.14 ppm	(365 µg/m ³) ²	Primary

Notes:

¹ The USEPA issued their final 8-hour ozone designations April 15, 2004 and Buckley AFB falls under ozone nonattainment (early action compacts).

² Parenthetical value is an approximately equivalent concentration.

ppm – parts per million

mg/m³ – milligrams per cubic meter

µg/m³ – micrograms per cubic meter

involving sunlight and previously emitted pollutants or “O₃ precursors.” These O₃ precursors consist primarily of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) that are directly emitted from a wide range of emission sources. For this reason, regulatory agencies attempt to limit atmospheric O₃ concentrations by controlling VOC pollutants (also identified as reactive organic gases or ROG) and NO₂.

The CAA and USEPA delegated responsibility for ensuring compliance with NAAQS to the states and local agencies. As such, each state must develop air pollutant control programs and promulgate regulations and rules that focus on meeting NAAQS and maintaining healthy ambient air quality levels. These programs are detailed in State Implementation Plans (SIPs) that must be developed by each state or local regulatory agency and approved by USEPA. A SIP is a compilation of regulations, strategies, schedules, and enforcement actions designed to move the state into compliance with all NAAQS. Any changes to the compliance schedule or plan (*e.g.*, new regulations, emission budgets, controls) must be incorporated into the SIP and approved by USEPA.

In 1997, USEPA initiated work on new General Conformity rules and guidance to reflect the new 8-hour O₃, PM_{2.5}, and regional haze standards that were promulgated in that year. Litigation delayed implementation of the new O₃ and PM_{2.5} ambient air quality standards. USEPA issued their final 8-hour ozone designations April 15, 2004 and Buckley AFB falls under ozone nonattainment (early action compacts). The General Conformity Rule and the promulgated regulations found in 40 CFR Part 93 exempt certain Federal actions from conformity determinations (*e.g.*, contaminated site cleanup and natural emergency response activities). Other Federal actions are assumed to conform if total indirect and direct project emissions are below *de minimis* levels presented in 40 CFR 93.153. The threshold levels (in tons of pollutant per year) depend upon the nonattainment status that the USEPA has assigned to a nonattainment area. Once the net change in nonattainment pollutants is calculated, the Federal agency must compare them to the *de minimis* thresholds.

Title V of the CAA Amendments of 1990 requires states and local agencies to permit major stationary sources. A major stationary source is a facility (*i.e.*, plant, base, or activity) that can emit more than 100 tons annually of any one criteria air pollutant, 10 tons per year of a hazardous air pollutant, or 25 tons per year of any combination of hazardous air pollutants. The purpose of the permitting rule is to establish regulatory control over large, industrial-type activities and monitor their impact on air quality.

Federal Prevention of Significant Deterioration (PSD) regulations also define air pollutant emissions from proposed major stationary sources or modifications to be “significant” if (1) a proposed project is within 10 kilometers of any Class I area, and (2) regulated pollutant emissions would cause an increase in the 24-hour average concentration of any regulated pollutant in the Class I area of 1 µg/m³ or more [40 CFR 52.21(b)(23)(iii)]. PSD regulations also define ambient air increments, limiting the allowable increases to any area’s baseline air contaminant concentrations, based on the area’s designation as Class I, II, or III [40 CFR 52.21(c)].

3.3.2 Existing Conditions

Under the authority of the CAA and subsequent regulations, USEPA has divided the country into geographical regions known as Air Quality Control Regions (AQCRs) to evaluate compliance with the NAAQS. Through the CAA, Congress stated that the prevention and control of air pollution belongs at the state and local level, thus USEPA has delegated enforcement of the PSD and Title V programs to the Colorado Department of Public Health and Environment (CDPHE). The CDPHE has adopted the NAAQS by reference, thereby requiring the use of the standards within the state of Colorado. The CDPHE implemented the Title V Operating Permit program through Title 5 Colorado Code of Regulations 1001.

The state of Colorado is divided into eight AQCRs. Buckley AFB is in Arapahoe County, which is covered by the Metropolitan Denver Intrastate AQCR (CDPHE 2002a). Each AQCR is classified as an attainment area or nonattainment area for each of the criteria pollutants depending on whether it meets or fails to meet the NAAQS for the pollutant. Ambient air quality for the Metropolitan Denver Intrastate AQCR is classified as a maintenance area for PM₁₀ and CO, and nonattainment (early action compacts) for O₃. Arapahoe County is unclassifiable/attainment for all other criteria pollutants. Unclassifiable areas are those areas that have not had ambient air monitoring and are assumed to be in attainment with NAAQS.

Emission sources at Buckley include both stationary and mobile sources. Stationary sources are included in the Base's Title V permit and include boilers and heaters, backup generators, and industrial chemical usage. Mobile sources on the Base include civilian and military motor vehicles and aircraft. Most of the on-road motor vehicles on the base are regulated by the State and are routinely tested through the Air Care Colorado program.

Buckley AFB is under the jurisdiction of USEPA Region 8 and the CDPHE. The CDPHE conducts annual compliance inspections at Buckley AFB. Based on this audit mechanism, the Base has implemented the required programs to maintain compliance with Federal and state air regulations.

Eagles Nest Wilderness Area and Rocky Mountain National Park are Federal Class I designated areas within 100 kilometers of Buckley AFB. Florissant Fossil Beds is a Federal Class II area within 100 kilometers of the facility. Florissant Fossil Beds has been designated by the state to have the same SO₂ increment as Federal Class I areas (CDPHE 2002b).

3.4 Geological Resources

3.4.1 Definition of the Resource

Geological resources consist of the earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of topography, soils, structure and stratigraphy, geology, minerals, and, where applicable, paleontology.

Topography. Topography pertains to the general shape and arrangement of a land surface, including its height and the position of its natural and human-made features.

Geology. Geology, the study of the earth's composition, provides information on the structure and configuration of surface and subsurface features. Such information derives from field analysis based on observations of the surface and borings to identify subsurface composition. Hydrogeology extends the study of the subsurface to water-bearing structures. Hydrogeological information helps in the assessment of groundwater quality and quantity and its movement.

Soils. Soils are the unconsolidated materials overlying bedrock or other parent material. Soils typically are described in terms of their complex type, slope, and physical characteristics. Differences among soil types in terms of their structure, elasticity, strength, shrink-swell potential, and erosion potential affect their abilities to support certain applications or uses. In appropriate cases, soil properties must be examined for their compatibility with particular construction activities or types of land use.

3.4.2 Existing Conditions

Topography. Buckley AFB is located west of the Great Plains within the western portion of the central high plains of Colorado. The region is surrounded on three sides by higher terrain areas including the Palmer Lake Divide to the south, the Rampart Range and Rocky Mountains to the west, and the Cheyenne Ridge to the north (BAFB 2002a).

The topography of Buckley AFB is comprised of both relatively flat land and rolling upland. Elevations range from 5,650 feet in the southeast corner to 5,500 feet in the northwest corner of the Base (BAFB 2002a).

Geology. Buckley AFB is within the Denver Basin, which is a structural depression that is 300 miles long and 200 miles wide. This depression was created during a mountain building event referred to as Laramide Orogeny. The Denver Basin consists of geologic layers in excess of 13,000 feet thick that range in age from Late Pennsylvania through Quaternary. There are five shallow principal stratigraphic units present within the Denver Basin: Fox Hills Sandstone, Laramie Formation, Arapahoe Formation, Denver

Formation, and Dawson Arkose. The basal (compact) unit of the Denver Basin is Pierre Shale that underlies the Fox Hills Sandstone. Surficial material consists of several layers of unconsolidated alluvial gravels (gravels deposited as a result of water processes), sands, clays, and eolian materials (deposited as a result of wind processes) that were deposited in response to glacial and interglacial events (BAFB 2002a).

Coal reserves are present beneath the surface of Buckley AFB; however, these reserves are economically nonrecoverable due to their low quality and depth beneath the surface. Although mineral reserves such as sand and gravel are present in the area, economically desirable reserves do not exist on the Base, nor are there any other significant mineral resources present (BAFB 2002a).

Soils. The U.S. Department of Agriculture Soil Conservation Service, recently renamed the Natural Resource Conservation Service (NRCS), mapped and classified the soils on Buckley AFB in 1971. The major soil mapping units present on Base include the Fondis-Weld, Alluvial Land-Nunn, and Renohill-Buick-Little associations. Figure 3-3 shows the extent of the soil associations on the Base. Other areas on Base have been identified as gravel pits, rock outcrop complexes, sandy alluvial land, and terrace escarpments (BAFB 2002a).

The Fondis-Weld association mapping unit, comprised of the Fondis and Weld soil series, covers the most surface area at Buckley AFB. This association consists of deep loamy soils that formed mainly in silty material deposited by the wind (loess). The Fondis soils are gently sloping (1 to 5 percent slope), well-drained, fertile upland soils with a high water-holding capacity (0.25 inch per inch of soil) and moderately slow permeability (< 0.63 inch per hour), and are susceptible to wind and water erosion. The Weld soil series consists of deep, well-drained, level to gently sloping (0 to 3 percent slope) soils that occur mainly in uplands. The Weld soils have a moderate rate of water intake and a high available water-holding capacity (0.20 to 0.25 inch per inch of soil). The most common soils in the Buckley AFB area are the Fondis silt loam and the Fondis-Colby silt loam (BAFB 2002a).

The Alluvial Land-Nunn association consists of soils that have moderate permeability (0.63 inch per hour) and high water-holding capacity (0.20 inch per inch of soil), and are typically found along floodplains and terraces. On Base, these soils are found along East Toll Gate Creek. These soils are deep, nearly level, loamy, and sandy, and support crops well, but need flood protection to prevent erosion and gully formation. The most common soil types in this association are the Nunn-Bresser Ascalon and the Nunn Loam series, both of which have moderate permeability (0.63 to 6.3 inches per hour) and high water-holding capacity (0.20 inch per inch of soil). Both are typically well-drained, gently sloping soils (0 to 3 percent slope) (BAFB 2002a).

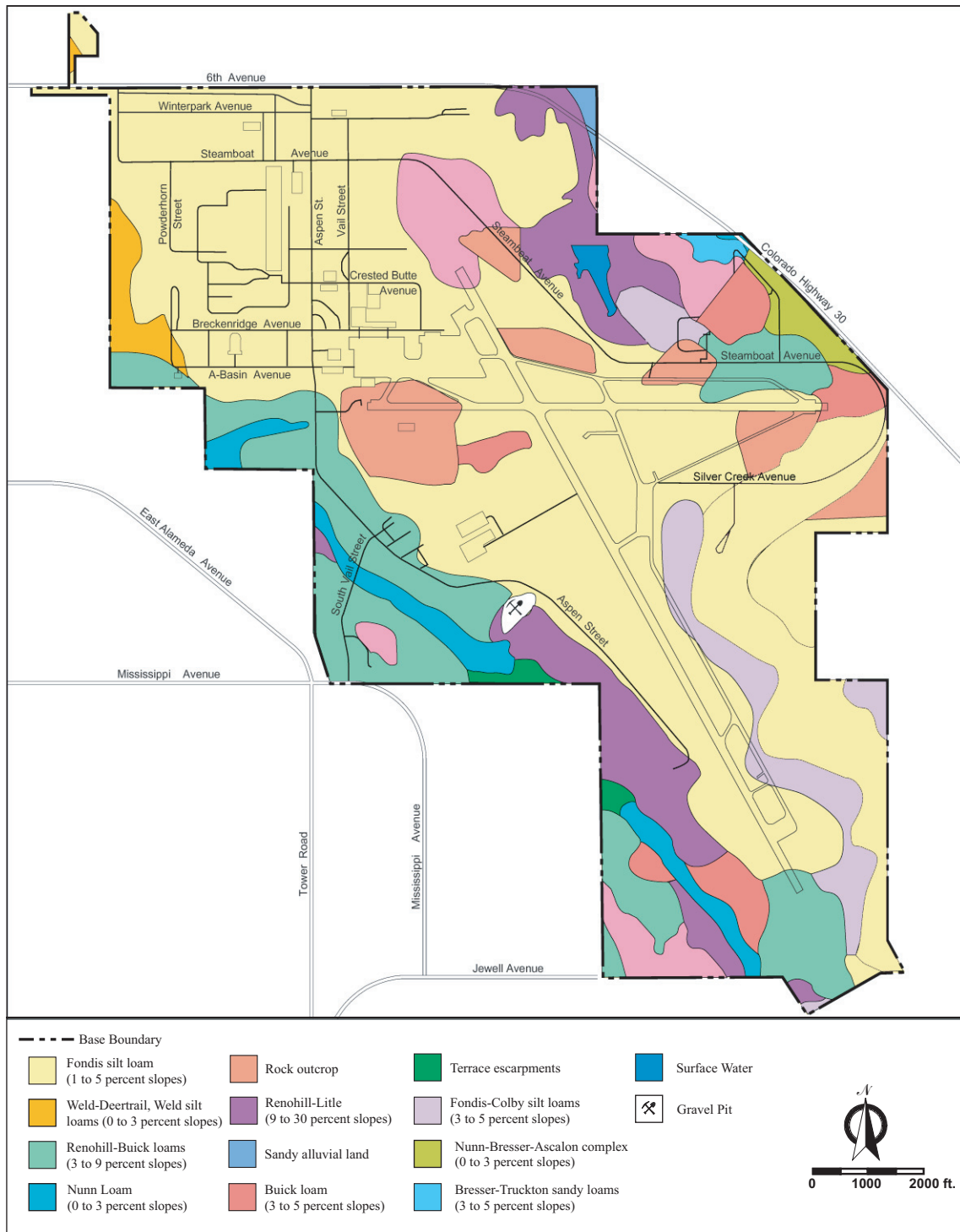


Figure 3-3. Soil Types at Buckley AFB

The Renohill-Buick-Litle association is comprised of moderately deep, well-drained, loamy to clayey soils. The most common soil series within this association are the Renohill-Litle complex and the Renohill-Buick loam. Renohill soils are characterized as being moderately fertile with moderate internal drainage, steep slopes (3 to 30 percent slope), moderately slow to slow permeability (less than 0.63 inch per hour), and moderate water-holding capacity (0.15 inch per inch of soil) (BAFB 2002a).

The NRCS completed a site visit for soil use as potential cropland at Buckley AFB in January 2001. The determination made by the NRCS was that "...it would not be feasible to introduce agricultural production on the base without the added cost of installing conservation practices and/or irrigation system." Dry cropland soils were identified on-Base as being of statewide importance. However, after a facility tour, few areas were recognized as having the potential to be converted to cropland, mainly due to parcel size and accessibility for farming operations (BAFB 2002a).

Soils of the Potential Project Areas. Soils at the location of the Proposed Action have been mapped within the Fondis-Weld association. Soils in the project area for Alternative 1 (northeast of the RTF) have been mapped within the Renohill-Buick-Litle association, while soils in the project area for Alternative 2 (northeast of the OSI) have been mapped in the Fondis-Weld, Renohill-Buick-Litle, and Alluvial Land-Nunn associations (in the riparian corridor of East Toll Gate Creek). In the vicinity of the OSI, the Renohill-Buick-Litle association is predominant.

3.5 Water Resources

3.5.1 Definition of the Resource

Water resources include groundwater, surface water and storm water systems. Evaluation identifies the quantity and quality of the resource and its demand for potable, irrigation, and industrial purposes.

Groundwater. Groundwater consists of subsurface hydrologic resources. It is an essential resource often used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater typically may be described in terms of its depth from the surface, aquifer or well capacity, water quality, surrounding geologic composition, and recharge rate.

Surface Water. Surface water resources consist of lakes, rivers, and streams. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale. Storm water flows, which can be exacerbated by high proportions of impervious surfaces associated with buildings, roads, and parking lots, are important to management of surface water. Storm water is also

important to surface water quality because of the potential to introduce sediments and other contaminants into lakes, rivers, and streams.

Storm water systems convey precipitation away from developed sites to appropriate receiving surface waters. For several reasons, storm water systems may employ a variety of devices to slow the movement of water. For instance, a large, sudden flow could scour a streambed and harm biological resources in that habitat. Storm water systems provide the benefit of reducing amounts of sediments and other contaminants that would otherwise flow directly into surface waters. Failure to size storm water systems appropriately to hold or delay conveyance of the largest predicted precipitation event will often lead to downstream flooding and the environmental and economic damages associated with flooding. As a general rule, areas with higher densities of development, such as urban areas, require greater degrees of storm water management because of the higher proportions of impervious surfaces that occur in urban centers.

Floodplains. Floodplains are areas of low-level ground present along a river or stream channel. Such lands may be subject to periodic or infrequent inundation due to rain or melting snow. Risk of flooding typically hinges on local topography, the frequency of precipitation events, precipitation intensity, and the size of the watershed above the floodplain. Flood potential is evaluated by the Federal Emergency Management Agency (FEMA). Flood Insurance Rate Maps (FIRMs) identify the 100-year and 500-year floodplains. The 100-year floodplain is the area that has a one percent chance of inundation by a flood event in a given year. Certain facilities inherently pose too great a risk to be located in either the 100- or 500-year floodplain, such as hospitals, schools, or storage buildings for irreplaceable records. Federal, state, and local regulations often limit floodplain development to passive uses such as recreational and preservation activities to reduce the risks to human health and safety.

EO 11988, *Floodplain Management*, requires Federal agencies to determine whether a proposed action would occur within a floodplain. This determination typically involves consultation of the appropriate FIRM, which contains enough general information to determine the relationship of the project area to nearby floodplains. EO 11988 directs Federal agencies to avoid floodplains unless the agency determines that there is no practicable alternative.

3.5.2 Existing Conditions

Groundwater. Buckley AFB is located within a groundwater basin known as the Denver Basin. Four of the five major bedrock aquifers that exist within the Denver Basin underlie the Base (BAFB 2002a): the Denver, Upper Arapahoe, Lower Arapahoe, and Laramie-Fox Hills aquifers. The aquifers are located in

zones of sandstones and siltstones and are separated by beds of shale with low permeability (BAFB 2002a).

The Denver aquifer is the uppermost aquifer and is approximately 1,000 feet thick. It is classified as a tributary in the area surrounding Buckley AFB because it comes in contact with surrounding surface water systems or their alluvium. The Upper and Lower Arapahoe aquifers underlie the Denver aquifer, and are approximately 400 to 700 feet thick. Below the Arapahoe aquifers, the Laramie Fox Hills groundwater system is 600 to 800 feet thick. The Denver and Arapahoe aquifers meet USEPA drinking water standards, and the Denver Basin aquifer system is a secondary source of drinking water for suburban Denver and nearby rural communities. However, the Laramie-Fox aquifer has been known to contain elevated levels of methane and hydrogen sulfide (BAFB 2003a).

The alluvial aquifers on Buckley AFB are 20 to 100 feet thick and resulted from the alluvial deposition and erosion associated with East Toll Gate Creek and Sand Creek. Groundwater is recharged to this aquifer through direct infiltration of precipitation and irrigation water, as well as by the lateral and upward seepage of groundwater. Groundwater is discharged from the alluvial aquifers through seepage into streams, evapotranspiration, downward seepage into underlying bedrock aquifers, and by extraction via pumping wells (BANGB 1999).

Six groundwater wells, which provided the water supply for the Base, are located on Buckley AFB. Only four of these wells are currently operating and two of them are recent additions for backup process water. A water system improvement installed in 1986 connected the Base system with the city of Aurora municipal water supply system. Since 1986, Buckley AFB has received domestic and municipal water from the city of Aurora (BANGB 1999).

Surface Water. The South Platte River, approximately 15 miles northwest of Buckley AFB, is the primary surface water drainage in the region. Several smaller intermittent tributaries within or adjacent to Buckley AFB feed this drainage system. Off-Base tributaries, Sand Creek to the north and Murphy Creek to the east, receive flows from the eastern portion of the Base. East Toll Gate Creek and an old tributary of Murphy Creek are the only named tributaries that are present on the Base. East Toll Gate Creek receives flows from the western side of the Base. All of these waterways are intermittent in the vicinity of and on Buckley AFB, although Sand Creek is perennial downstream from the Base (BAFB 2002a). Buckley AFB also has extensive natural and man-made surface drainage as well as underground storm drainage lines.

The most prominent permanent surface water source on Buckley AFB is Williams Lake. This small artificial pond was constructed in 1961 by damming a minor tributary of Murphy Creek. Water supply to

Williams Lake consists of local runoff and water from an on-Base 6,600-gallon-per-hour well. Williams Lake is used entirely for the storage of well water for fire fighting and recreational purposes. Although Williams Lake currently occupies approximately 10 acres, the impoundment has a maximum surface area of 30 acres and the capacity to store up to 85 acre-feet of water below the spillway (BAFB 2002a).

The proposed location for the modular units under all alternatives (northwest of Building 490) is approximately 1 mile north of East Toll Gate Creek. The location of the permanent facility under the Proposed Action (north of Building 490) is also approximately 1 mile north of the creek, while the Alternative 2 site (northeast of the OSI compound) is less than 1,000 feet south of East Toll Gate Creek. The Alternative 1 site (northeast of the RTF) is approximately 2,000 feet south of Sand Creek and approximately 2,000 feet east of Williams Lake.

Floodplains. No FIRM is available for floodplains on Buckley AFB. The only floodplain maps available for Toll Gate Creek are for areas directly downstream of Buckley AFB. Based on a review of FIRMs of floodplains adjacent to Buckley AFB and visual observations made during the site reconnaissance, the floodplains extend onto the Base. No part of the Proposed Action or Alternative 1 is located within a floodplain. Under Alternative 2, the permanent facility would likely be less than 500 feet from the 100-year floodplain of East Toll Gate Creek. The average daily precipitation, as recorded at the Denver International Airport, is less than 0.2 inches. Since 1948, the area has experienced approximately 12 storms which produced two inches or more of precipitation, and the probability of receiving more than 0.5 inches in any single day is less than five percent (WRRC 2004).

3.6 Biological Resources

3.6.1 Definition of the Resource

Biological resources include native or naturalized plants and animals, and the habitats, such as wetlands, forests, and grasslands, in which they exist. Sensitive and protected biological resources include plant and animal species listed as threatened or endangered by the USFWS or a state. Determining which species occur in an area affected by a proposed action may be accomplished through literature reviews and coordination with appropriate Federal and state regulatory agency representatives, resource managers, and other knowledgeable experts.

Under the Endangered Species Act (ESA) (16 United States Code (U.S.C.) § 1536), an “endangered species” is defined as any species in danger of extinction throughout all or a significant portion of its range. A “threatened species” is defined as any species likely to become an endangered species in the foreseeable future. The USFWS maintains an updated list of species that are regarded as candidates for

possible listing under the ESA. Even though candidate species receive no statutory protection under the ESA, the USFWS believes it is important to advise government agencies, industry, and the public that these species are at risk and may warrant protection under the Act. DOD and Air Force Policy is “When practical, give the same protection to candidate species as that you do for species that are already listed” (AFI 32-7064, Paragraph 7.1.1). In the past, the USFWS categorized candidate species as either Category 1 or Category 2. Category 1 candidate species are those for which substantial information exists on biological vulnerability and threat(s) to support proposals to list as threatened or endangered. Category 2 candidate species are those for which information indicates that listing as threatened or endangered is possibly appropriate, but for which substantial data on biological vulnerability and threat(s) are not currently known or on file to support the proposed rules. Beginning with this updated list, the USFWS will recognize as candidates for listing only species that would have been included in the former Category 1 and will no longer maintain a Category 2 list.

Biological resources also include wetlands, which are an important natural system and habitat because of the diverse biologic and hydrologic functions they perform. These functions include water quality improvement, groundwater recharge and discharge, pollution mitigation, nutrient cycling, providing wildlife habitat, supporting unique and niche flora and fauna, storm water attenuation and storage, sediment detention, and erosion protection. Wetlands are protected as a subset of the “waters of the United States” under Section 404 of the Clean Water Act (CWA). The term “waters of the United States” has a broad meaning under the CWA and incorporates deepwater aquatic habitats and special aquatic habitats (including wetlands). The U. S. Army Corps of Engineers (USACE) defines wetlands as “those areas that are inundated or saturated with ground or surface water at a frequency and duration sufficient to support—and under normal circumstances do support—a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (33 CFR 328). EO 11990, *Protection of Wetlands*, directs Federal agencies to avoid destruction or modification of wetlands whenever there is a practicable alternative.

Information on Biological Resources in this EA is from the *Integrated Natural Resources Management Plan* for Buckley AFB, unless otherwise cited (BANGB 1999, BAFB 2002a).

3.6.2 Existing Conditions

Vegetation

Historic Vegetation. Buckley AFB is located in the Great Plains-Palouse Dry Steppe Province Ecoregion (Bailey 1995). This ecoregion has also been classified by other researchers as a shortgrass prairie ecosystem. Given its location, the climax vegetation at Buckley AFB is assumed to be shortgrass prairie

dominated by western wheatgrass (*Pascopyrum smithii*) with pockets of buffalo grass (*Buchloe dactyloides*), blue grama (*Bouteloua gracilis*), and other grama species (*Bouteloua* spp.). This vegetation is still evident in natural areas that have not been seeded with crested wheatgrass (*Agropyron cristatum*). Other historically important species include the shrub winterfat (*Krascheninnikovia lanata*) and the forb scarlet globemallow (*Sphaeralcea coccinea*). In disturbed and overgrazed areas, grasses are typically replaced by prickly pear cactus (*Opuntia macrohiza*), snakeweed (*Gutierrezia sarothrae*), and fringed sagewort (*Artemesia frigida*). All of these species have been observed at Buckley AFB (BAFB 2002a).

Additional common shortgrass prairie species include needlegrass (*Stipa* spp.); sunflower (*Helianthus* spp.); locoweed (*Oxytropis* spp.); prickly pear cactus; yucca (*Yucca glauca*); and many wildflower species, including blazingstar (*Nuttallia nuda*) and white prickly poppy (*Argemone polyanthemos*). Scattered shrubs such as sagebrush (*Seriphidium canum*), snakeweed (*Gutierrezia sarothrae*), and rabbitbrush (*Chrysothamnus nauseosus*) are supported in these grassland ecosystems. Trees within shortgrass prairie environments are restricted to riparian corridors, and typically include plains cottonwood (*Populus sargentii*), willows (*Salix* spp.), and box elder (*Acer negundo*) (BAFB 2002a).

Current Native Vegetation Cover. The native vegetation at Buckley AFB has been divided into the following types: midgrass prairie, crested wheatgrass prairie, rubber rabbitbrush, bottomland meadows, and cottonwood/willows. In general, the midgrass prairies, which occur primarily on upland areas, are the most diverse plant habitat. Typically, these prairies include blue grama areas that contain grama grass interspersed with forbs such as scarlet globe mallow, prickly pear, and snakeweed. Other common grasses include tumble grass (*Schedonnardus paniculatus*) and three-awn (*Aristida fendleriana*, *Aristida longiseta*). Areas that receive slightly more moisture, such as depressions or gullies, are dominated by fringed brome grass (*Bromus ciliatus*). Since its introduction, crested wheatgrass has become widely established. Because there is no grazing pressure at Buckley AFB, crested wheatgrass prairies are more uniform and have few other species associated with them. Areas with high cover of rabbitbrush have also been noted; however, even these stand types were dominated by blue grama and associated species (BAFB 2002a).

Two vegetation types generally occupy riparian corridors at Buckley AFB. Bottomland meadows are generally wider and flatter and, in some cases, exhibit wetland characteristics. Fringed brome grass may be a dominant species in these areas. Fringed brome grass occurs in a wide variety of habitats and can occur in all soil moisture conditions. Areas at Buckley AFB that are dominated by fringed brome grass include potential wetlands because of this species' reported affinity to moist soil conditions (the USFWS has classified fringed brome grass as a facultative wetland species in the western Great Plains). The

cottonwood/willows vegetation type dominates parts of the riparian corridor that appear to be moister and steeper than areas with fringed brome. Four species in these areas, all of which are indicators of wetland conditions, are sandbar willows (*Salix exigua*) (obligate), peach leaf willows (*Salix amygdaloides*) and shining willows (*Salix lucida*) (facultative wet), and plains cottonwood (*Populus deltoides*) (facultative) (BAFB 2002a).

Weedy Disturbed Areas. Weedy disturbed areas at Buckley AFB appear to consist of two types: (1) areas that have been disturbed by the excessive presence of black-tailed prairie dogs (*Cynomys ludovicianus*), and (2) areas that were disturbed during construction activity. These disturbed areas are often the source of invasive or noxious weeds for the entire Base. These areas are populated by a mix of native fringed sagewort, as well as the exotic and/or invasive cheatgrass (*Bromus tectorum*), field bindweed (*Convolvulus arvensis*), Canada thistle (*Cirsium arvense*), and Russian thistle (*Salsola kali*). In addition, some disturbed areas are populated by exotics including Dalmatian toadflax (*Linaria genistifolia* ssp. *dalmatica*) and leafy spurge (*Euphorbia esula*) (460 CES/CEVP 2003a).

Lawn and Landscaped Areas. Turf grasses are the predominant vegetation type on the improved areas of Buckley AFB. Grass varieties consist of common introduced species, including Kentucky bluegrass (*Poa pratensis*), common bermuda grass (*Cynodon dactylon*), wintergrass (*Poa annua*), and Alta fescue mixes (*Festuca* spp.). A variety of shrubs and trees are also present on Buckley AFB, including green ash (*Fraxinus pennsylvanica*), honey locust (*Gleditsia triacanthos*), Colorado spruce (*Picea pungens*), ponderosa pine (*Pinus ponderosa*), Siberian elm (*Ulmus pumila*), Gambel's oak (*Quercus gambelii*), and buffalo juniper (*Juniperus sabina*) (BANGB 1999).

Vegetation of Potential Project Areas. Vegetation supported in the location of the temporary modular units has been mapped as crested wheatgrass. However, this area has been historically disturbed by construction and demolition activities, as well as the presence of prairie dogs, which have created sparse vegetation conditions. Also in this vicinity are mowed drainage swales.

The proposed location of the permanent facility under the Proposed Action has also been mapped as crested wheatgrass, and has also been historically disturbed by construction, demolition, and the presence of prairie dogs. The swale north of Building 490 that bisects the property supports some wetland vegetation, such as cattails (*Typha* spp.), near the culvert opening; however, this is a maintained drainage ditch that would not meet the definition of a jurisdictional wetland. The remainder of this proposed location consists of lawn and landscaped areas also invaded by prairie dogs, as well as developed land.

Vegetation in the vicinity of the Alternative 1 site has been mapped as midgrass prairie. This area is approximately 10 feet lower in elevation than the RTF, and likely receives storm water runoff from the impervious surfaces of the facility, which results in higher foliar cover for this vegetation community. Some disturbance, likely associated with construction of the RTF, is evident from small patches of bare ground in this area.

Three plant communities have been identified at the Alternative 2 site: crested wheatgrass, midgrass prairie, and cottonwood/willow (associated with the riparian corridor of East Toll Gate Creek). Historic aerial photographs indicate that this area has never been developed. Therefore, the crested wheatgrass and midgrass prairie are higher-quality habitat compared to the vegetation communities in the previous locations. However, powerlines have been installed in the vicinity of the OSI compound and East Toll Gate Creek, and there is some evidence of vehicular disturbance associated with maintaining this utility corridor.

Wildlife

The large acreage of open grass prairie, riparian corridor associated with East Toll Gate Creek, and the open water at Williams Lake on Buckley AFB provides a diversity of habitat that supports many wildlife species typical of the high plains of Colorado.

Mammals. Mammalian predators potentially found at Buckley AFB include the red fox (*Vulpes vulpes*), badger (*Taxidea taxus*), and coyote (*Canis latrans*). White-tailed deer (*Odocoileus virginianus*), mule deer (*Odocoileus hemionus*), and pronghorn (*Antilocapra americana*) are common ungulates historically found at Buckley AFB. However, all larger animals including white-tailed deer, mule deer and pronghorn have been effectively excluded from the Base by an exterior boundary fence to prevent collision hazards with aircraft (BAFB 2003a).

Numerous small mammal species have been observed on Buckley AFB, including black-tailed prairie dog, pocket gopher (*Geomys bursarius*), thirteen-lined squirrel (*Citellus tridecemlineatus*), fox squirrel (*Sciurus carolinensis*), black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus auduboni*), white-tailed jackrabbit (*Lepus townsendi*), eastern cottontail (*Sylvilagus floridanus*), deer mouse (*Peromyscus maniculatus*), and meadow vole (*Microtus pennsylvanicus*) (BAFB 2003a).

Birds. Comprehensive avian surveys have not been conducted at Buckley AFB. However, observational data gathered for the 1989 Integrated Land Use Management Plan indicated that a diverse array of bird species occupies the Base year-round.

The most abundant species in the area include the horned lark (*Eremophila alpestris*), western meadowlark (*Sturnella neglecta*), black-billed magpie (*Pica pica*), grasshopper sparrow (*Ammodramus savannarum*), western kingbird (*Tyrannus verticalis*), eastern kingbird (*Tyrannus tyrannus*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), house finch (*Carpodacus mexicanus*), and pigeon (*Columba livia*). Several species of blackbirds are also relatively common, especially in the improved areas of the Base (BAFB 2002a).

Raptors (birds of prey) can be observed on the Base, especially during winter months. Although once more abundant, declines in the population of the black-tailed prairie dog has resulted in a drop in ferruginous hawk (*Buteo regalis*) population. The red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), and golden eagle (*Aquila chrysaetos*) are also common migrants passing through the Base. Common birds of prey observed breeding on Buckley AFB include burrowing owl (*Athene cunicularia*), red-tailed hawk, Swainson's hawk (*Buteo swainsoni*), and American kestrel (*Falco sparverius*). Other raptors such as the great horned owl (*Bubo virginianus*), northern harrier, and barn owl (*Tyto alba*) may breed on the Base (BAFB 2002a).

The wetland and riparian areas of Buckley AFB, as well as Williams Lake, support ducks and geese, including northern shoveler (*Anas clypeata*), blue-winged teal (*Anas discors*), and Canada goose (*Branta canadensis*). Killdeer (*Charadrius vociferus*) and great blue herons (*Ardea herodias*) are shorebirds also found in association with water on the Base (BAFB 2003a).

Reptiles and Amphibians. A total of seven amphibian and 19 reptile species occur in Arapahoe County and may occur on Buckley AFB. Twelve of the reptile species are snakes, including the bullsnake (*Pituophis melanoleucus*), plains hognose snake (*Heterodon nasicus nasicus*), and the prairie rattlesnake (*Crotalus viridis viridis*). Other common reptiles include the western painted turtle (*Chrysemys picta belli*) and the northern prairie lizard (*Sceloporus undulatus garmani*). The great plains toad (*Bufo cognatus*) and plains spadefoot toad (*Scaphiopus bombifrons*) are among the amphibians that may be found at Buckley AFB (BAFB 2003a).

Sensitive Species

There are 14 protected and sensitive species, including eight birds, two mammals, three plants and one fish, that potentially occur in Arapahoe County, Colorado (see Table 3-2). Of those 14 species, eight are known to occur or have potentially suitable habitat at Buckley AFB: the bald eagle (*Haliaeetus*

Table 3-2. Protected and Sensitive Species Potentially Occurring in Arapahoe County

Common Name (Scientific Name)	Habitat Preferences (Reason For Decline)	Federal Status	State Status	Potentially Suitable Habitat Present at Buckley AFB?
Birds				
Bald eagle* (<i>Haliaeetus leucocephalus</i>)	Sea coasts, rivers, and large lakes; nests in tall trees or cliffs near water (habitat destruction, illegal shooting, pesticides)	T	T	Yes
Interior least tern** (<i>Sterna antillarum</i>)	Sandy/pebbly beaches, inland river sandbars for nesting and shallow water for foraging (riverine alterations, habitat loss, nest disturbance)	E	E	No
Lesser Prairie Chicken (<i>Tympanuchus pallidicinctus</i>)	Mixed grass-dwarf shrub communities that occur on sandy soils; principally the sand sagebrush (<i>Artemisia fillifolia</i>)-bluestem (<i>Andropogon</i> spp.) association in Colorado. Leks typically occur on knolls or ridges with relatively short and/or sparse vegetation (habitat loss, fragmentation, and degradation)	C	T	No
Mountain plover** (<i>Charadrius montanus</i>)	Prairie grasslands, arid plains and fields; nesting plovers choose shortgrass prairies grazed by prairie dogs, bison and cattle, and overgrazed tallgrass and fallow fields (habitat loss, overgrazing, predation)	PT	SC	Yes
Mexican spotted owl** (<i>Strix occidentalis lucida</i>)	Lower elevation forests mostly in deeply incised, rocky canyons; complex forest structures that contain uneven-aged, multi-level and old-aged, thick forests (logging, catastrophic wildfire)	T	T	No
Piping plover** (<i>Charadrius melodus</i>)	Sandy lakeshore beaches, sandbars within riverbeds, and sandy wetland pastures; all of which must be sparsely vegetated (habitat alteration and destruction; recreational activities near nesting sites)	E	T	No
Western burrowing owl* (<i>Athene cunicularia</i>)	Primarily found in grasslands and mountain parks, usually in or near prairie dog towns; also uses well-drained, steppes, deserts, prairies and agricultural lands (urbanization, decimation of prairie dog populations)	NL	T	Yes
Whooping crane (<i>Grus americana</i>)	Breed and nest along lake margins or among rushes and sedges in marshes and meadows. Winter on estuarine marshes, shallow bays, and tidal salt flats. Prefer sites with minimal human disturbance (hunting and specimen collection, human disturbance, and conversion of the primary nesting habitat to hay, pastureland, and grain production)	E	E	No

Table 3-2. Protected and Sensitive Species Potentially Occurring in Arapahoe County (continued)

Common Name (Scientific Name)	Habitat Preferences (Reason For Decline)	Federal Status	State Status	Potentially Suitable Habitat Present at Buckley AFB?
Mammals				
Black-footed ferret** (<i>Mustela nigripes</i>)	Closely associated with prairie dog habitat; utilizes prairie dog burrows for nesting (habitat loss, poisoning, canine distemper, plague)	E	T	Yes
Black-tailed prairie dog* (<i>Cynomys ludovicianus</i>)	Short-grass prairie, they avoid heavy brush and tall grass areas (habitat loss, sport hunting, extermination by ranchers/farmers)	C	SC	Yes
Preble's meadow jumping mouse** (<i>Zapus hudsonius preblei</i>)	In and near densely vegetated, shrub dominated riparian areas (habitat loss)	T	SC	Yes
Plants				
Colorado butterfly plant** (<i>Gaura neomexicana coloradensis</i>)	Sub-irrigated, alluvial soils of drainage bottoms surrounded by mixed grass prairie; Elevation 5800-6200 ft. (vegetative succession, haying, grazing, herbicide spraying, urban expansion)	T	R/S1	No
Ute ladies-tresses** (<i>Spiranthes diluvialis</i>)	Open wetland and riparian areas with permanent sub-irrigation; early successional riparian habitats such as point bars, sand bars, and low lying gravelly, sandy, or cobbly edges (alteration of hydrology, invasive plants, habitat loss, low reproductive rate, loss of pollinators)	T	R/S2	No
Colorado Butterfly Plant (<i>Gaura neomexicana ssp. Coloradensis</i>)	Sub-irrigated, alluvial soils of drainage bottoms surrounded by mixed grass prairie; Elevation 5800-6200 ft. (vegetative succession, haying, grazing, herbicide spraying, urban expansion)	T	R/S1	Yes
Fish				
Pallid Sturgeon (<i>Scaphirhynchus albus</i>)	Large, turbid, free-flowing riverine habitat; occurs in strong current over firm gravel or sandy substrate and in reservoirs (habitat modification including construction of large dams and channelization, past commercial exploitation, and pollution)	E	NL	No

Source: BAFB 2002a; NatureServe 2003; CDW 2003; USFWS 2003.

Note:

*: Known to occur at Buckley AFB

C: Federally or state-listed candidate species

PT: Proposed threatened

S2: Endangered or threatened in state

T: Federally or state-listed threatened species

NL: Not listed (species may be federally protected, but is not listed by the USFWS as potentially occurring in Arapahoe County)

**: Not likely to occur at Buckley AFB

E: Federally or state-listed endangered species

R: State-listed as rare

S1: Critically endangered in state

SC: State-listed special concern species (not a statutory category)

leucocephalus), mountain plover (*Charadrius montanus*), black-tailed prairie dog (*Cynomys ludovicianus*), western burrowing owl (*Athene cunicularia*), black-footed ferret (*Mustela nigripes*), Preble's meadow jumping mouse (*Zapus hudsonius preblei*), Ute ladies'-tresses (*Spiranthes diluvialis*), and Colorado Butterfly Plant (*Gaura neomexicana* ssp. *Coloradensis*) (BAFB 2002a).

Bald eagle (*Haliaeetus leucocephalus*). Suitable habitat on Buckley AFB is primarily the riparian areas of Toll Gate Creek and Williams Lake although this raptor uses all undeveloped areas of the Base for hunting, especially areas containing prairie dogs. None are known to nest on the base.

Mountain plover (*Charadrius montanus*). Suitable prairie habitat for the mountain plover exists on Buckley AFB, and this species has been observed in the vicinity of the Base (BAFB 2002a). However, the disturbed habitat associated with the modular office facility construction and Proposed Action site would not be considered suitable for this species. The crested wheatgrass and midgrass prairie associated with the alternative sites are considered marginal habitat. Therefore, it is unlikely that the mountain plover would occur in any of the proposed construction locations.

Western burrowing owl (*Athene cunicularia*). Burrowing owls are known to use black-tailed prairie dog towns, which were observed at the proposed location for the modular units as well as the proposed location of the permanent facility under the Proposed Action. Black-tailed prairie dog burrows were also observed northeast of the OSI at the Alternative 2 site. Burrowing Owls migrate to the Buckley AFB area from March 1 to October 31 of each year (BAFB 2003c).

Black-tailed prairie dog (*Cynomys ludovicianus*). Partially because of its status as a keystone species, black-tailed prairie dogs have been classified as a species of special concern in the state of Colorado. In February 2000, the USFWS designated the black-tailed prairie dog as a candidate species for listing (or a species warranted but precluded from listing on the threatened and endangered species list). During the site visit conducted by engineering-environmental Management (e²M) for this EA in February 2004, black-tailed prairie dogs were observed in the proposed location for the modular units, as well as the proposed location of the permanent facility under the Proposed Action. Some signs of black-tailed prairie dog activity (burrows and associated patches of sparse vegetation) were also observed northeast of the OSI at the Alternative 2 site. Signs of black-tailed prairie dog activity were not observed at the Alternative 1 site within the RTF; however, a detailed survey was not conducted.

Black-footed ferret (*Mustela nigripes*). The black-footed ferret is known to use prairie dog habitat, including nesting in their burrows. However, this species has never been observed at Buckley AFB, and

the USFWS has designated Buckley AFB as being within a “block clearance zone” that does not support the black-footed ferret. It is therefore assumed that this species does not occur on the Base (BAFB 2002a).

Preble’s meadow jumping mouse (*Zapus hudsonius preblei*). Potential habitat for the Preble’s meadow jumping mouse (Preble’s) was identified in the riparian corridors along East Toll Gate Creek and other wetland areas (including those near Williams Lake) of Buckley AFB. However, surveys for the Preble’s were conducted and no individuals were observed. These surveys were reported to the USFWS in October 2001 and, based on them, the USFWS concluded that a population of Preble’s is not likely present within Buckley AFB (USFWS 2002, BAFB 2002a).

Ute ladies’-tresses (*Spiranthes diluvalis*). Although suitable habitat for this plant species occurs along East Toll Gate Creek, a survey of all riparian corridors at Buckley AFB was conducted for the Ute ladies’-tresses in August 2001, and no individuals were observed. Therefore, it is unlikely that the plant is supported on the Base.

Colorado Butterfly Plant (*Gaura neomexicana Coloradensis*). The Colorado Butterfly Plant grows in areas of elevations of 5800-6200 feet in subirrigated alluvial soils near drainage bottoms surrounded by mixed grass prairie (BAFB 2002a). Colorado butterfly plant is an early successional species (although probably not a pioneer) adapted to periodically disturbed, sub-irrigated stream channels with short vegetative cover. Historically, flooding was probably the main source of habitat disturbance, although wildfire and grazing may have also been important. In the absence of occasional disturbance, the plant’s preferred habitat may become dominated by dense growth of willows, grasses, and exotic forbs, preventing new seedlings from becoming established. Individual Colorado butterfly plants may live for 1-5 years as stemless, vegetative rosettes before flowering once and dying (Nature Serve 2003). A survey was performed by the Colorado Natural Heritage Program in June 2000. Surveys have not been completed during the proper time and due to continuing drought are probably extremely rare. The Colorado Butterfly Plant is not found at the Proposed Action or Alternative 1 or 2 sites (CNHP 2000).

Wetlands

A total of 23 wetland areas have been identified on Buckley AFB during a 2002 wetlands survey (BAFB 2003a). These wetlands include the following types, as defined by Cowardin et al. in 1979:

- Palustrine Emergent Persistent
- Palustrine Emergent Non-Persistent
- Palustrine Forested Broad Leaved Deciduous
- Palustrine Scrub/Shrub Broad Leaved Deciduous

There are no wetlands in the vicinity of the Proposed Action. However, there is a wetland area approximately 4,000 feet south of this location (see Figure 3-4). There are no wetlands in the immediate vicinity of the Alternative 1 site; however, wetlands associated with Williams Lake are approximately 2,000 feet to the west. There are two wetland areas that have been identified along East Toll Gate Creek that are within approximately 500 feet of the Alternative 2 site.

A jurisdictional wetland delineation by the USACE would be required should any activity associated with the Proposed Action or alternatives affect wetland areas.

3.7 Cultural Resources

3.7.1 Definition of the Resource

Cultural resources are defined by the National Historic Preservation Act (NHPA) as prehistoric and historic sites, structures, districts, or any other physical evidence of human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or any other reason. Depending on the condition and historic use, such resources may provide insight into living conditions in previous civilizations and/or may retain cultural and religious significance to modern groups.

Several Federal laws and regulations govern protection of cultural resources, including the NHPA (1966), the Archaeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archaeological Resources Protection Act (1979), and the Native American Graves Protection and Repatriation Act (1990).

Typically, cultural resources are subdivided into *archaeological resources* (prehistoric or historic sites where human activity has left physical evidence of that activity but no structures remain standing) or *architectural resources* (buildings or other structures or groups of structures that are of historic or aesthetic significance). Archaeological resources comprise areas where human activity has measurably altered the earth or deposits of physical remains are found (*e.g.*, arrowheads and bottles).

Architectural resources include standing buildings, bridges, dams, and other structures of historic or aesthetic significance. Generally, architectural resources must be more than 50 years old to be considered for the National Register of Historic Places (NRHP). More recent structures, such as Cold War-era resources, may warrant protection if they have the potential to gain significance in the future or if they meet “exceptional” significance criteria.

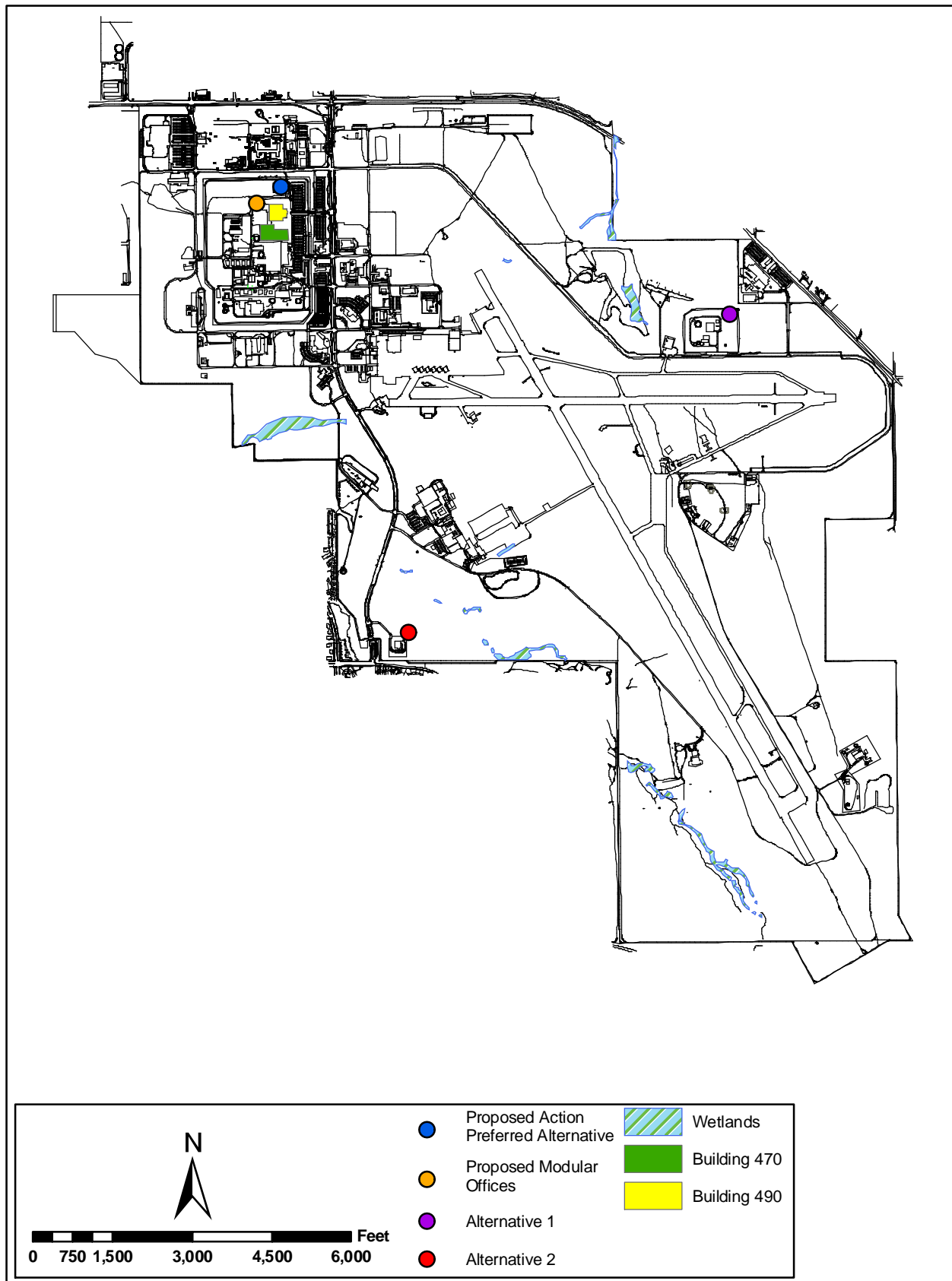


Figure 3-4. Wetlands at Buckley AFB

Traditional cultural properties or *sacred sites* can include archaeological resources, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture.

The EA and NHPA Section 106 processes require an assessment of the potential impact of an undertaking on historic properties that are within the proposed project's Area of Potential Effect (APE), which is defined as the geographic area(s) "within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." In accordance with EO 12372, *Intergovernmental Review of Federal Programs*, determinations regarding the potential effects of an undertaking on historic properties are presented to the SHPO.

3.7.2 Existing Conditions

Four cultural resource surveys have been conducted within the boundaries of Buckley AFB. These investigations included inventories of 3,110 acres, or 95 percent of the land area. All of the general security areas on the Base have been surveyed along with three acres within the high security area. The APEs for the Proposed Action and all alternative actions have been surveyed.

The surveys have identified 34 prehistoric sites, four historic sites, three multicomponent sites and 25 isolated finds. None of these sites or isolated finds have been recommended as eligible for inclusion to the NRHP and the SHPO has concurred with all survey recommendations. There are no known sites near or within the APE for the Proposed Action, Alternative 1 or Alternative 2.

Historic structure inventories and consultation with the SHPO have identified six structures that are eligible for nomination to the NRHP. Two structures, Building 801 (5AH2274) and Building 909 (5AH2276), are historic aircraft hangers. These buildings are not located near the APE for the Proposed Action.

The other four structures, Building 402 (5AH2332), Building 403 (5AH2288), Building 404 (5AH2289), and Building 405 (5AH2333), are radomes built in the 1970s. They have been determined by the SHPO to be eligible for inclusion on the NRHP under Criterion C, as excellent examples of radome construction, and under Criterion G, as resources that have achieved significance within the last 50 years. These radome structures are located within the fenced high security zone and in the vicinity of the APE for the Proposed Action.

No Traditional Cultural Properties have been identified on Buckley AFB. Buckley AFB contains no historic districts or historic landscapes.

3.8 Socioeconomics and Environmental Justice

3.8.1 Definition of the Resource

Socioeconomics are defined as the basic attributes and resources associated with the human environment, particularly population and economic activity. Regional birth and death rates and immigration and emigration affect population levels. Economic activity typically encompasses employment, personal income, and industrial or commercial growth. Changes in these two fundamental socioeconomic indicators may be accompanied by changes in other components, such as housing availability and the provision of public services. Socioeconomic data at county, state, and national levels permit characterization of baseline conditions in the context of regional, state, and national trends.

Data in three areas provide key insights into socioeconomic conditions that might be affected by a proposed action. Data on employment might identify gross numbers of employees, employment by industry or trade, and unemployment trends. Data on personal income in a region can be used to compare the “before” and “after” effects of any jobs created or lost as a result of a proposed action. Data on industrial or commercial growth or growth in other sectors provides baseline and trend line information about the economic health of a region.

In appropriate cases, data on an installation’s expenditures in the regional economy help to identify the relative importance of an installation in terms of its purchasing power and jobs base. Demographics identify the population levels and changes to population levels of a region. Demographics data may also be obtained to identify, as appropriate to evaluation of a proposed action, a region’s characteristics in terms of race, ethnicity, poverty status, educational attainment level, and other broad indicators.

On February 11, 1994, the President issued EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. This EO requires that Federal agencies’ actions substantially affecting human health or the environment do not exclude persons; deny persons benefits; or subject persons to discrimination because of their race, color, or national origin. The essential purpose of the EO is to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, tribal, and local programs and policies. Consideration of environmental justice concerns includes race, ethnicity, and the poverty status of populations in the vicinity of where a proposed action would

occur. Such information aids in evaluating whether a proposed action would render vulnerable any of the groups targeted for protection in the EO.

Socioeconomic data shown in this section are presented at the U.S. Census Bureau Tract, county, and state levels to characterize baseline socioeconomic conditions in the context of regional, state, and national trends. Data have been collected from previously published documents issued by Federal, state, and local agencies and from state and national databases (*e.g.*, U.S. Bureau of Economic Analysis' Regional Economic Information System).

On April 21, 1997, the President issued EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. This EO requires Federal agencies, to the extent permitted by law and mission, to identify and assess environmental health and safety risks that might disproportionately affect children. The EO further requires Federal agencies to ensure that their policies, programs, activities, and standards address these disproportionate risks. The order defines environmental health and safety risks as "risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink and use for recreation, the soil we live on, and the products we use or are exposed to)." Such information aids in evaluating whether a proposed action would render vulnerable children targeted for protection in the EO.

3.8.2 Existing Conditions

Social and Economic Condition. Buckley AFB is eight miles east of Denver, Colorado, within the city of Aurora, in Arapahoe County. Denver and Arapahoe County have populations of 554,636 and 487,967, respectively (U.S. Bureau of Census 2000). Aurora is the state's third largest city with a population of 282,930 in 2003 (Aurora 2004). The populations of Arapahoe County and Denver increased by 19.8 percent and 15.7 percent, respectively, between 1990 and 2000 (U.S. Bureau of Census 2000). The population of Aurora increased by 19.6 percent between 1990 and 2000. These increases in population are lower than the statewide increase of 23.4 percent, but higher than the national increase of 11.6 percent (U.S. Bureau of Census 2000). Buckley AFB represents one census bureau tract, and the area around the Base represents eight additional tracts. For the purposes of this EA, these nine Census Bureau Tracts are considered the Region of Influence (ROI) around Buckley AFB. The population within the ROI was 4,934 in 2000, a 13.2 percent increase over 1990 (U.S. Bureau of Census 2000).

The city of Aurora has approximately 12,300 companies employing more than 118,000 people. The workforce in Aurora consists of highly educated individuals; 89 percent of the population are high school graduates and 39 percent have obtained a college degree or higher. The Aurora/Denver metro area is considered the financial, governmental, and medical center of the Rocky Mountain region (Aurora 2003).

Table 3-3 lists industry of employment for residents around Buckley AFB, Arapahoe County, and Colorado. As would be expected, a larger portion of residents living around Buckley AFB are in the Armed Services than in Arapahoe County or the state (U.S. Bureau of Census 2000). A larger percentage of residents around Buckley AFB are employed in construction, retail trade, transportation and warehousing, and utilities than county or statewide averages. Lower percentages are employed in arts; entertainment; recreation; accommodation and food services; educational, health, and social services; or other services in comparison to county and statewide averages (U.S. Bureau of Census 2000).

Table 3-3. Employment of Residents in ROI, Arapahoe County, and the State of Colorado

Economic and Social Indicators	ROI¹	Arapahoe County	State of Colorado
Percent of Employed Persons in Armed Forces	1.8%	0.5%	0.8%
Industry of Civilian Labor Force			
Agriculture, forestry, fishing and hunting, and mining	0.7%	0.7%	2.0%
Construction	9.4%	7.2%	9.1%
Manufacturing	7.5%	6.7%	9.1%
Wholesale trade	5.3%	4.2%	3.5%
Retail trade	12.3%	12.1%	11.8%
Transportation and warehousing, and utilities	8.8%	5.6%	4.9%
Information	6.1%	7.4%	4.9%
Finance, insurance, real estate, and rental and leasing	10.5%	11.4%	7.7%
Professional, scientific, management, administrative, and waste management services	10.6%	13.2%	11.7%
Educational, health, and social services	12.5%	15.7%	17.0%
Arts, entertainment, recreation, accommodation and food services	6.7%	6.9%	9.0%
Other services (except public administration)	4.6%	4.7%	4.8%
Public administration	5.0%	4.1%	4.6%

Source: U.S. Bureau of the Census 2000

Note: ¹ The Region of Influence consists of the U.S. Census Tract encompassing Buckley AFB (tract 71.02) and the eight tracts surrounding the Base (tracts 83.09, 83.53, 70.08, 70.33, 70.43, 70.64, 70.65, and 70.65).

Arapahoe County's unemployment rate in 2003 was 3.5 percent, lower than the statewide average of 5.6 percent (KFF 2004). The 2000 unemployment rate was higher in the area around Buckley AFB at 2.8 percent, compared to 2.4 percent within Arapahoe County and slightly lower than the statewide average of

3.0 percent (Figure 3-5) (U.S. Bureau of Census 2000). Residents living within the ROI have a lower per capita income (\$20,104) in comparison with the county (\$28,147) and statewide (\$24,049) averages. The percentage of persons living below the poverty level in the ROI (7.8 percent) is higher than the countywide average (5.8 percent) and lower than the statewide average (9.3 percent) (U.S. Bureau of Census 2000). The median household income for the ROI (\$47,281) is similar when compared to the statewide average (\$47,203), but lower than the countywide average (\$53,570) (U.S. Bureau of Census 2000).

The percent of residents who have obtained a high school diploma is higher in the ROI (67.8 percent), than countywide (53.6 percent) and statewide (54.3 percent) averages (Figure 3-6) (U.S. Bureau of Census 2000). However, a substantially smaller percentage of residents in the ROI have achieved a college education (19.5 percent) compared to countywide (37.0 percent) or statewide (32.7 percent). The Aurora Public School District has an enrollment of 32,495 students in 46 schools. Student-to-staff ratios (excluding principals, assistant principals, psychologists and social workers) are 22-to-1 for elementary schools; 19-to-1 for middle schools, and 19-to-1 for high schools (APSD 2004).

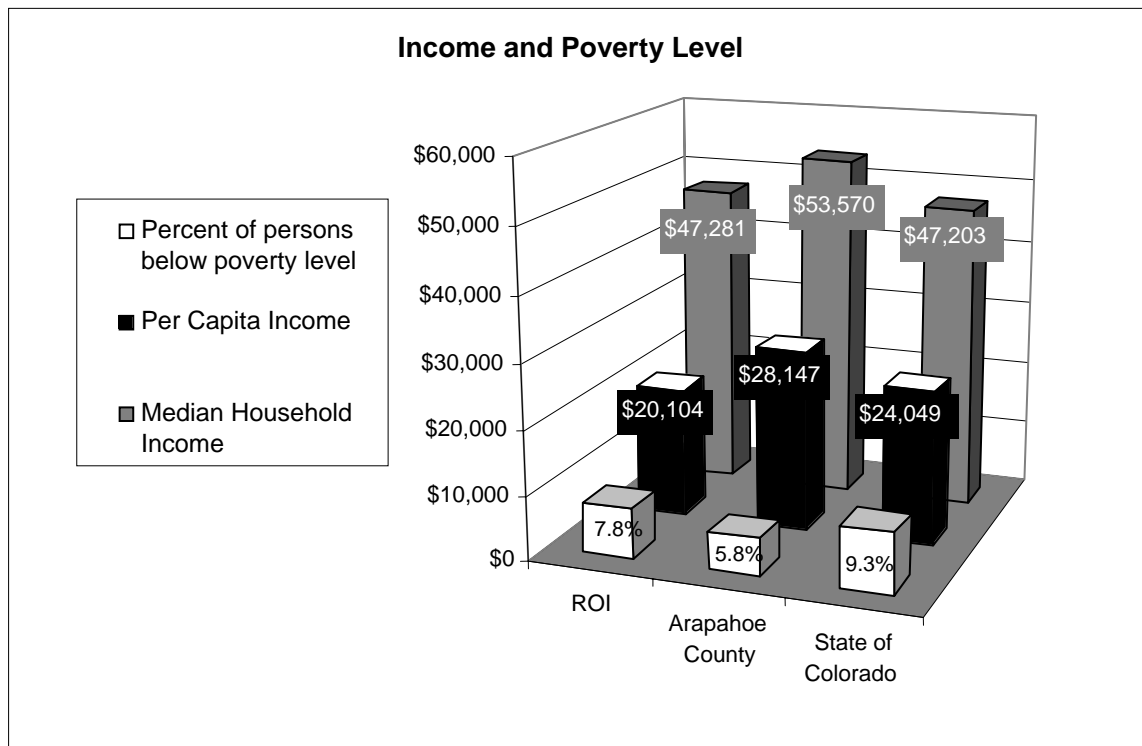


Figure 3-5. Income and Poverty Level for Residents in ROI, Arapahoe County, and the State of Colorado

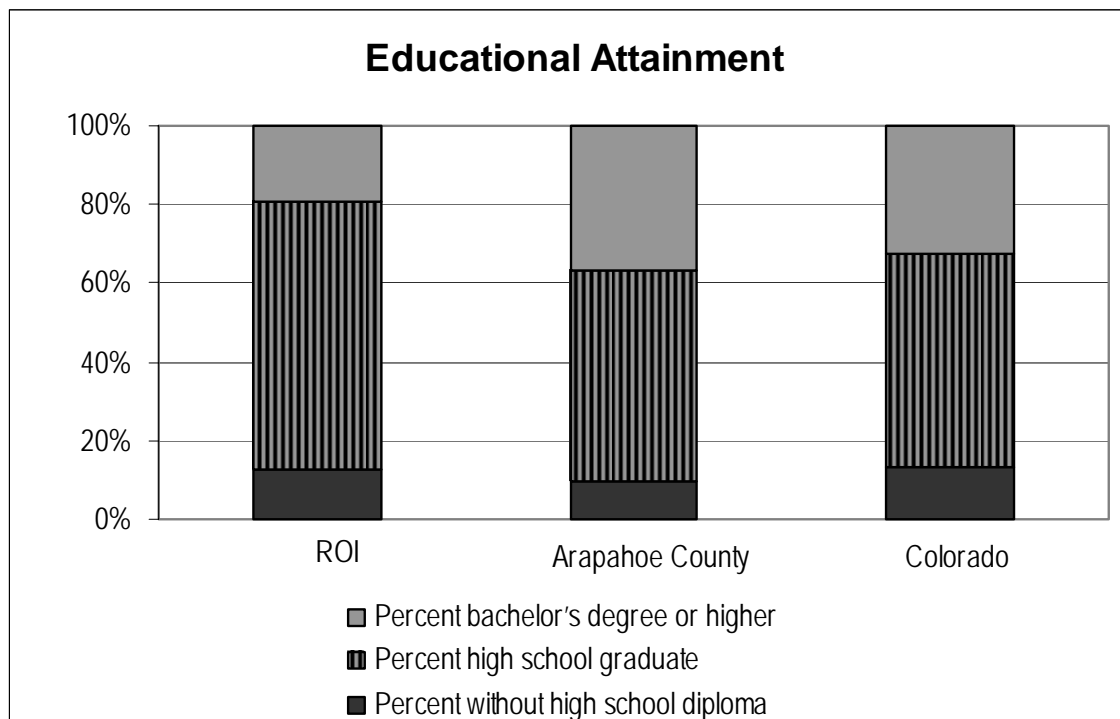


Figure 3-6. Educational Attainment for Residents in ROI, Arapahoe County, and the State of Colorado

Environmental Justice. For the purposes of analysis in this EA, residents living within the nine census bureau tracts in and around Buckley AFB were evaluated. Census bureau tracts 83.09 and 70.08, which are located northwest of the Base, were found to have a somewhat higher portion of minority populations than adjoining areas. Figure 3-7 shows the race of residents in the ROI, Arapahoe County, and the state of Colorado. Residents of census bureau tract 83.09 and 70.08 were also found to have a lower per capita income, \$14,066 and 16,449, respectively, and a higher unemployment rate, 3.9 and 4.0 percent, respectively, in comparison with residents in adjoining areas. Tracts 83.09 and 70.08 also have higher percentages of individuals living below the poverty level, 16.0 and 15.4 percent, respectively. Residents in the ROI have a per capita income of \$20,104, an unemployment rate of 2.8 percent, and 7.8 percent of residents living below poverty (U.S. Bureau of Census 2000). For the purpose of this analysis, residents living within census bureau tracts 83.09 and 70.08 will be further evaluated to determine if a disproportionate level of impact could occur.

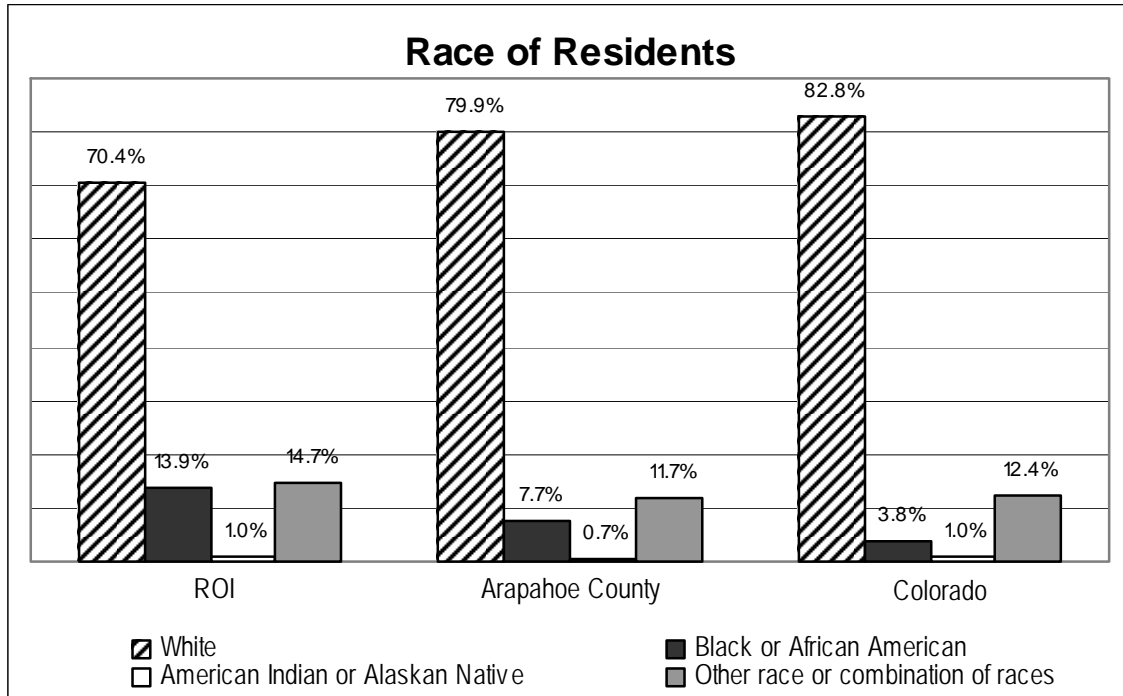


Figure 3-7. Race of Residents in ROI, Arapahoe County, and the State of Colorado

3.9 Infrastructure

3.9.1 Definition of the Resource

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure is wholly human-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as “urban,” or developed. The availability of infrastructure and its capacity to support growth are generally regarded as essential to the economic growth of an area. The infrastructure information below provides a brief overview of each infrastructure component and comments on its existing general condition. The infrastructure components to be discussed in this section include transportation systems, utilities (electrical power and water supply), solid waste, and wastewater treatment.

Transportation and circulation refer to the movement of vehicles throughout a road and highway network. Primary roads are principal arterials, such as major interstates, designed to move traffic but not necessarily to provide access to all adjacent areas. Secondary roads are arterials such as rural routes and major surface streets, which provide access to residential and commercial areas, hospitals, and schools.

Solid waste management is primarily concerned with the availability of landfills to support a population’s residential, commercial, and industrial needs. Alternative means of waste disposal might involve waste-to-

energy programs or incineration. In some localities, landfills are designed specifically for, and are limited to, disposal of construction and demolition debris. Recycling programs for various waste categories (*e.g.*, glass, metals, and papers) reduce reliance of landfills for disposal.

3.9.2 Existing Conditions

Transportation. Buckley AFB is located in the Denver metropolitan area, along the Front Range of the Rocky Mountains. Major interstate highways include I-70, I-25, and I-76. Branching off I-70 to the west of Buckley AFB is I-225, which runs north-south through the city of Aurora. Two major east-west arteries intersecting with I-225 in the city of Aurora include 6th Avenue and Mississippi Avenue, two roads that serve as the main routes into Buckley AFB through the North and South gates. E-470, a toll road that runs north-south near the eastern boundary of Buckley AFB, also provides indirect access to 6th Avenue and Mississippi Avenue (BAFB 2002d).

According to Colorado Department of Transportation (CDOT) 2003 State Highway Traffic Statistics, the annual average daily traffic (AADT) volume on 6th Avenue (SH 30) near the entrance to the Base was 5,767, with a Design Hour Volume (DHV) of 11 percent, which represents 634 vehicles in the average peak hours. The AADT is relatively low, and several times lower than the AADT for 6th Avenue between I-225 and Airport Boulevard, west of the Base (CDOT, 2004).

Access to Buckley AFB is available via gates at the intersections of Aspen Avenue and 6th Avenue (North Gate), 6th Avenue and Telluride Avenue (Telluride gate), and Aspen Avenue and Mississippi Avenue (South Gate). Previously, of the total traffic entering and departing the Base, 67 percent used the North Gate (460 CES/CEVP 2003b). During the morning peak hour, the North Gate processed 46 percent of inbound vehicles (655), while the South Gate processed 54 percent (780). During the peak 15-minute period from 0645 to 0700, approximately 135 inbound vehicles were processed through the North Gate, while 210 inbound vehicles were processed at the South Gate. A draft traffic study anticipated that the existing two lanes at each gate can handle approximately 200 to 250 vehicles during the peak 15-minute period (BAFB 2003d).

Aspen Avenue is a four-lane, divided street running north to south from the North Gate to A-Basin Street. From this intersection southward, Aspen Avenue becomes a two-lane divided roadway to the South Gate. At the South Gate, Mississippi Avenue intersects with South Vail Street which connects with Aspen Avenue in the central portion of Base. Breckenridge and Steamboat Avenues distribute traffic from Aspen Avenue to the major industrial and flightline areas (460 CES/CEVP 2003b). Aspen Avenue has average daily traffic ranging from 3,000 vehicles per day in the central Base area to 500 vehicles per day in the less

traveled areas of Base. On South Vail Street, between the intersection with Aspen Avenue and the South Gate, the average daily traffic is 4,000 vehicles per day (460 CES/CEVP 2003b).

No current Level of Service (LOS) data is available for roads within Buckley AFB. A 1997 traffic study found that, other than during weekday morning and evening traffic peaks, base roads and intersections operated at an acceptable level. Currently, vehicles entering the base slow or are held for processing at a gate, resulting in vehicles entering the base at a steady pace. Congestion has not been observed at nearby base intersections, such as Aspen and Steamboat Avenues (Johnson, 2004). In addition, Buckley AFB has recently undertaken infrastructure improvements to include upgrades to South Aspen Street, construction of a new road around the Munitions Storage Area, improvements to A-Basin Avenue, upgrades to the Perimeter Patrol Road, and maintenance of the entire base transportation network.

Electricity. Electricity is provided by Xcel Energy. The Xcel Energy Substation, located at the intersection of Colfax Avenue and I-225, provides electrical power to the Base through 13.2 kilovolt (kV) overhead distribution lines. Buckley AFB is the largest user of power from this substation (USAF 2003). Between 25 October and 28 March 2002, the facilities at Buckley AFB used approximately 343,073 kilowatt-hours of electricity per day.

Natural Gas: Natural gas is provided to Buckley AFB through a gas main beneath 6th Avenue. Buckley AFB uses approximately 122.3 million cubic feet of natural gas basewide per year in boilers and generators (BAFB 2002e).

Water supply. Buckley AFB has a contract with the city of Aurora for potable water. Water is distributed to facilities on Buckley AFB for domestic use, process use, and fire protection (USAF 2003). Buckley AFB used approximately 0.19 million gallons per day (MGD) between 19 September and 11 April 2002.

Solid Waste. Solid waste collection and disposal services at Buckley AFB are handled by a private contractor. Waste is collected from dumpsters located throughout the Base and routinely transported to the Denver-Arapahoe Disposal Site in Arapahoe County and the BFI Landfill in Adams County (88th and Tower). The permitted portion of the landfill occupies 2,680 acres with an estimated design life of 40 to 50 years (USAF 2003).

Buckley AFB generated approximately 4 tons per day of solid waste in FY 2002. This amount does not include construction and demolition wastes, asbestos, or recycled items. Buckley AFB recycled approximately 1.4 tons of material per day in FY 2002 (USAF 2003).

Wastewater Treatment. Buckley AFB generates both domestic and industrial wastewater. The Base has a Wastewater Contribution Permit issued by Metro Wastewater Reclamation District (effective February 1, 2003). The Metro Wastewater Region treatment plant was designed to meet the population estimates through 2010, with a hydraulic capacity of 185 MGD. Currently, the plant treats 140–156 MGD. Buckley AFB reported an average daily flow of 185,543 gallons per day between July and September 2002 (USAF 2003).

3.10 Hazardous Substances

3.10.1 Definition of the Resource

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act, and the Toxic Substances Control Act define hazardous substances. The Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA), which was further amended by the Hazardous and Solid Waste Amendments, defines hazardous wastes. In general, both hazardous materials and wastes include substances that, because of their quantity, concentration, physical, chemical, or infectious characteristics, may present substantial danger to public health or welfare or the environment when released or otherwise improperly managed.

Evaluation of hazardous materials focuses on underground storage tanks and aboveground storage tanks and the storage, transport, and use of pesticides and herbicides, fuels, and Petroleum, Oils, and Lubricants. Evaluation may also extend to the generation, storage, transportation, and disposal of hazardous wastes when such activity occurs at or near the project site of a proposed action. In addition to being a threat to humans, the improper release of hazardous materials and wastes can threaten the health and well-being of wildlife species, botanical habitats, soil systems, and water resources. In the event of a release of hazardous materials or wastes, the nature and extent of contamination will vary based on type of media impacted (*e.g.*, soil, water) and the physical surroundings.

Special hazards are those substances that may pose a risk to human health, but are not regulated as contaminants under the hazardous waste statutes. Included in this category are asbestos containing materials (ACM), radon, lead-based paint (LBP), polychlorinated biphenyls, and unexploded ordnance. The presence of special hazards or controls over them might affect, or be affected by, a proposed action. Information on special hazards describing their locations, quantities, and condition assists in determining the significance of a proposed action.

Through its Environmental Restoration Program (ERP), DOD evaluates and cleans up sites where hazardous wastes have been spilled or released to the environment. The ERP provides a uniform, thorough methodology to evaluate past disposal sites, to control the migration of contaminants, to minimize potential hazards to human health and the environment, and to clean up contamination. Descriptions of ERP activities provide a useful gauge of the condition of soils, water resources, and other resources that might be affected by contaminants. They also can aid in identifying a property's usefulness for a given purpose (e.g., activities dependent on groundwater usage may be foreclosed where remediation of a groundwater contaminant plume remains to be completed).

3.10.2 Existing Conditions

Hazardous Materials. Air Force Instruction (AFI) 32-7086, *Hazardous Materials Management*, establishes procedures and standards that govern management of hazardous materials throughout the base (military, civilians, and contractors). It applies to all USAF personnel who authorize, procure, issue, use, or dispose of hazardous materials, and to those who manage, monitor, or track any of those activities. The Integrated Environmental Response Plan maintained by the Base describes preventative actions that are designed to reduce the potential for hazardous material spills and prevent them from entering the environment. This plan also presents required notification procedures and detailed response measures for potential releases (BANGB 1999).

Hazardous and toxic material procurements at Buckley AFB are approved and tracked by the Bioenvironmental Engineering, Safety and the Environmental Flights located at the Base. The Environmental Management office at Buckley AFB supports and monitors environmental permits, hazardous material and hazardous waste storage, spill prevention and response, and participation on the Base Environmental Protection Committee.

Hazardous Wastes. The 460 ABW maintains a Hazardous Waste Management Plan as directed by AFI 32-7042, *Solid and Hazardous Waste Compliance*. This plan prescribes the roles and responsibilities of all members of Buckley AFB with respect to the waste stream inventory, waste analysis plan, hazardous waste management procedures, training, emergency response, and pollution prevention. The plan establishes the procedures to comply with applicable Federal, state, and local standards for solid waste and hazardous waste management. Management of hazardous waste is the responsibility of each waste-generating organization and environmental management flight (460 CES/CEV).

Wastes generated at Buckley AFB include flammable solvents, contaminated fuels and lubricants, paints and coatings, stripping chemicals, oils, paint-related materials, municipal solid waste (MSW), and other

miscellaneous wastes. A majority of the waste generated on the Base is the result of aircraft maintenance. Buckley AFB produces less than 2,200 pounds of hazardous waste per month and is considered a small quantity generator. After hazardous wastes are generated, they are collected at an initial accumulation point until the accumulated quantity reaches 55 gallons. It is then immediately transferred to the Central Accumulation Site. Buckley AFB does not have a RCRA Part B permit since the Base does not accumulate or store hazardous waste for more than 180 days, and does not treat or dispose of hazardous waste on-site. All accumulated wastes are transported by Defense Reutilization and Marketing Office contractors and disposed of at permitted off-site facilities. In calendar year 2002, Buckley AFB disposed of 7,335 pounds of hazardous waste and 9,132 pounds of universal waste (BAFB 2003e).

Asbestos Containing Materials. AFI 32-1052, *Facilities Asbestos Management*, provides the direction for asbestos management at USAF installations. This instruction incorporates by reference applicable requirements of 29 CFR 669 *et seq.*, 29 CFR 1910.1025, 29 CFR 1926.58, 40 CFR 61.3.80, Section 112 of the CAA, and other applicable AFIs and DOD Directives. AFI 32-1052 requires bases to develop an asbestos management plan for the purpose of maintaining a permanent record of the status and condition of ACM in installation facilities, as well as documenting asbestos management efforts. In addition, the instruction requires installations to develop an asbestos operating plan detailing how the installation accomplishes asbestos-related projects. Section 112 of the CAA regulates emission of asbestos fibers to ambient air. USEPA policy is to leave asbestos in place if disturbance or removal could pose a health threat.

Buckley AFB has an Asbestos Management Plan as prescribed by AFI 32-1052, *Facility Asbestos Management*. This plan specifies procedures for the removal, encapsulation, enclosure, and repair activities associated with ACM abatement projects. Additionally, it is designed to protect personnel who live and work on Buckley AFB from exposure to airborne asbestos fibers as well as to ensure the installation remains in compliance with Federal, state, and local regulations pertaining to asbestos. Materials that might contain asbestos include pipe insulation and floor tiles. Asbestos materials are removed on an as-needed basis to minimize health risks from release of asbestos fibers during normal activities, maintenance, renovation, or demolition.

It is Buckley AFB policy that sites within known World War II-era development be further evaluated and appropriate response plans developed and implemented as necessary (per applicable laws and regulations) to ensure that contamination, if present, is not released to the environment and workers and the public are not exposed.

A review of aerial photographs indicates that World War II-era structures were located on and/or near the proposed construction sites for the Proposed Action and subsequently demolished. For locations within the area of known World War II-era development, there is the potential for asbestos to be present as (1) insulation on abandoned buried steamlines, (2) abandoned buried transit water lines, and (3) debris in surface and/or near-surface soils remnant from building demolition. Therefore, the potential exists for finding ACM at the proposed construction site.

A review of an aerial photograph from 1942 revealed multiple buildings located on and/or near the area where the Proposed Action is to take place. Based on a layout plan of the Buckley AFB dated 1945 the buildings included barracks, a day room, mess, infirmary, theater, lavatory, and CCC facility. By 1956, these buildings, with the possible exception of three smaller structures, had been demolished and were replaced with 17 new structures. The functions of the new buildings were not known. In an aerial photograph taken in 1973, there are no buildings left in the area where the Proposed Action construction sites are to be located (MES 2003).

Radon. There are no Federal or state standards regulating radon exposure; however, USEPA authored a pamphlet, “A Citizen’s Guide to Radon,” which offers advice to persons concerned about radon in their homes. USAF policy requires implementation of the Air Force Radon Assessment and Mitigation Program to determine levels of radon exposure to military personnel and their dependents. USAF policy is to mitigate elevated levels of radon to acceptable levels and conduct follow-up sampling to validate the effectiveness of the mitigation.

Radon is a naturally occurring radioactive gas found in soils and rocks; it comes from the natural breakdown or decay of radium. Radon is an odorless, colorless gas believed to be harmful at all exposure levels. Once inside an enclosed space, radon can accumulate. There is an increased risk of developing lung cancer when exposed to elevated levels of radon. In general, the risk increases as the level of radon and the length of exposure increase. USEPA has established a guidance level of 4 picoCuries per liter (pCi/L) of radon in indoor air for residences; however, there have been no standards established for commercial structures. Radon gas accumulations greater than 4 pCi/L are considered to represent a health risk to occupants.

USEPA’s Environmental Data Registry reported that Buckley AFB is located in an area designated by USEPA as a Zone 1 area (indoor average level greater than 4 pCi/L). The average activity for basements was reported as 7 pCi/L with 67 percent of the tested locations with activity levels between 4 and 20 pCi/L.

Environmental Restoration Program. ERP (formerly known as the Installation Restoration Program) is a subcomponent of the Defense Environmental Restoration Program that became law under the Superfund

Amendments and Reauthorization Act. The ERP requires each DOD installation to identify, investigate, and remediate hazardous waste disposal or release sites. Buckley AFB's ERP program closely parallels CERCLA, as amended by the Superfund Amendments and Reauthorization Act, in terms of distinct states of site identification, investigation, restoration design, implementation, and community involvement (460 ABW 2002).

Buckley AFB began its ERP in 1982 with the investigation of possible locations of hazardous waste contamination. A Phase I Records Search was conducted in 1986. Ten ERP sites are located on the Base. None of these sites have been identified on the National Priorities List under CERCLA. Figure 3-8 shows the known locations of the ERP sites and the proposed location of construction projects on Buckley AFB. Table 3-4 provides a summary of ERP sites at Buckley AFB. Plans for future development in the area of any of the ERP sites should take into consideration the possible restrictions and constraints that they represent.

Two samples revealed concentrations of PAH benzo(a)pyrene at concentrations exceeding the CDPHE surface soils standard for PAHs. These samples were collected from borings taken in fill material that contained wood chips and roofing material. These were isolated occurrences and do not indicate widespread contamination (MES 2003). Three samples also contained the pesticide "Dieldrin." Although the quantifiable reporting limit for Dieldrin in three samples was higher than the state CDPHE surface soil standard due to dilution of the samples, no estimated concentrations of Dieldrin above the method detection limit were reported. Dieldrin was not found in other samples at this site, nor has it been detected at other sites on the base. No other information indicates that pesticides would be a concern at this site. Therefore, it is reasonable to presume that pesticides are not likely to be present. In addition, the ERP program is conducting a basewide preliminary assessment which may identify other environmental concerns not previously identified at the Base.

Table 3-4. Summary of ERP Sites at Buckley AFB

ERP Site No	Site Name	Location	Status
FT-001	Former Fire Training Area No. 2	East side of the Base near Buildings 1601 and 1604	This site is currently undergoing a supplemental remedial investigation.
WP-002	Waste Oil Disposal Pit	Southwestern side of the Base	Remedial investigations found groundwater contaminants at concentrations that exceed maximum contaminant levels. This site requires further monitoring.
LF-003	Base Dump/ Base Landfill	North of Mississippi Gate	This site has been assessed and no significant risk was found at the site. This site requires further monitoring.
FT-004	Former Fire Training Area No. 3	Northwestern side of the Base, north of A-Basin Avenue and East of Copper Mountain Street	The soil within the burn pit area must be either removed or covered. There is no time limit for this action, and the Base has plans to eventually cover this area with a paved parking lot. The site is currently scheduled for additional remedial action.
FT-005	Former Fire Training Area No. 1	Northeast corner of Monarch Street and Steamboat Avenue	The Air Force is revising a No Further Response Action Planned Decision Document for regulatory concurrence.
SD-006	Storage Drain System (Building 801)	Airfield parking apron and drainage ditch to the south of the apron	This site is closed.
DP-007	Sludge Drying Beds	North of 6 th Avenue	This site requires further monitoring.
RW-008	Army Aircraft Burial Site	Specific location unknown	This site is closed.
ST-009	Underground Storage Tank (UST) Burial Site	Adjacent to Building 903	Clean-up and tank removal activities were completed in 1987 in accordance with Colorado UST Program. A remedial investigation is scheduled for the future for this site.
SS-010	Former Warehouse Area	Along the northern border of the Base	A remedial investigation determined that the site and shallow groundwater are contaminated with perchloroethylene (PCE). A supplemental remedial investigation began in September 2002.

Source: 460 ABW 2002

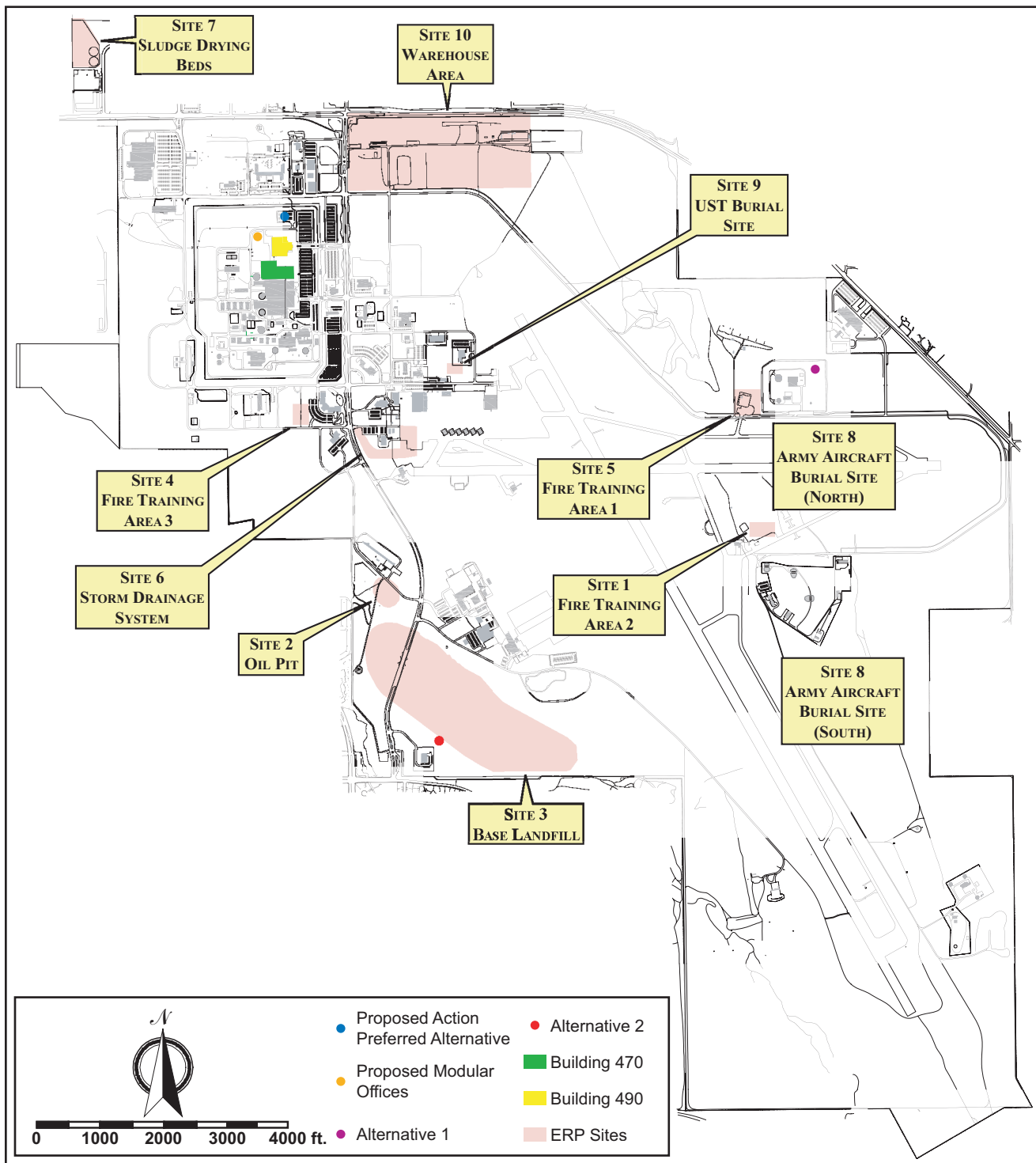


Figure 3-8. Environmental Restoration Program (ERP) Sites at Buckley AFB

THIS PAGE INTENTIONALLY LEFT BLANK

4. Environmental Consequences

4.1 Noise

4.1.1 Proposed Action

The proposed construction activities detailed in Section 2.3 would generate typical construction noises. These activities would occur intermittently between FY 2004 and FY 2008. Construction personnel would be exposed to high noise levels during construction. Implementation of the Proposed Action would have minor, temporary direct effects on the noise environment near the project sites resulting from the use of heavy equipment during construction activities. The nearby facilities would experience muffled construction noise during the workday. However, noise generation would last only for the duration of construction activities, and could be reduced through the use of equipment exhaust mufflers and restriction of construction activity to normal working hours (between 7:00 a.m. and 5:00 p.m.). Noise produced by construction at the sites would not affect sensitive receptors on or off the Base. In addition, the noise environment on the Base is dominated by military aircraft overflights. Noise associated with construction activities would be comparatively minor. Therefore, short-term minor direct adverse effects would be expected as a result of the Proposed Action.

The noise produced by aircraft activities would not change under the Proposed Action. The location of the Proposed Action is within the DNL of 65 dBA noise contour. Since the DSOC facilities are not noise-sensitive structures, special construction is not necessary. Increased traffic from personal vehicles and service and delivery trucks would cause negligible, indirect effects on noise.

4.1.2 Alternative 1

Alternative 1 entails locating the DSOC facility near the RTF on Buckley AFB, and impacts would be similar to the Proposed Action. Alternative 1 is within the same DNL of 65 dBA noise contour as the Proposed Action.

4.1.3 Alternative 2

This alternative entails locating the DSOC facility at Buckley AFB northeast of the OSI facility. Due to the proximity of nearby residences, noise during construction and operation of the permanent facility at the Alternative 2 site would be noticed by residents. Alternative 2 is within the same DNL of 65 dBA noise contour as the Proposed Action.

4.2 Land Use

4.2.1 Proposed Action

Under the Proposed Action, the modular and permanent facilities would be located in areas compatible with the land use (administration, mission operations and maintenance) set forth in the Area Development Plan in Buckley AFB's General Plan. The effects associated with construction would include temporary disruption of land uses due to elevated noise levels, increased dust, interference with roadway access, and visual effects. The installation of utilities, such as power and water, could also temporarily affect land uses. However, operation of the proposed facilities would not affect land use in the long-term. Therefore, only short-term, minor adverse, direct effects on land use are anticipated. No indirect effects to land use would be expected.

4.2.2 Alternative 1

Under Alternative 1, the proposed modular and permanent facility would be located in areas of compatible land use classified as mission operation and maintenance, while the proposed permanent facility would be located in an area with land uses classified as administrative and mission operations and maintenance. Land adjacent to the site is undeveloped land. Since the site layout has not yet been completed, some lands designated as open space might also be affected. Direct effects associated with construction would include temporary disruption of land uses due to elevated noise levels, increased dust, interference with roadway access, and visual effects. The installation of utilities, such as power and water, could also temporarily affect land uses. If open space were to be impacted, construction and the subsequent operation of the proposed facility would have a long-term, minor adverse effect on land use. No indirect effects to land use would be expected.

4.2.3 Alternative 2

Under Alternative 2, the proposed modular and permanent facility would be located in areas of compatible land use classified as mission operations and maintenance. The majority of the construction for the permanent facility would occur in the open space and outdoor recreation land use. Direct effects associated with construction would include temporary disruption of land uses due to elevated noise levels, increased dust, interference with roadway access, and visual effects. The installation of utilities, such as power and water, could also temporarily affect land uses. Construction and the subsequent operation of the proposed facility would have a long-term, minor adverse effect on land use. No indirect effects on land use would be expected.

4.3 Air Quality

As mentioned in Section 3, the area including Buckley AFB is classified as a maintenance area for PM₁₀, and CO, nonattainment (early action compacts) for O₃, and is designated as an unclassified/attainment area for all other criteria pollutants. Since Buckley AFB is in an area designated as nonattainment for O₃ and maintenance for PM₁₀ and CO, a conformity applicability analysis is required to determine whether the Proposed Action is subject to the Conformity Rule. With respect to the General Conformity Rule, impacts on air quality would be considered significant and, therefore, subject to an evaluation to determine compliance with the General Conformity Rule, if

- The proposed Federal action would result in an increase of a nonattainment or maintenance area's emission inventory by 10 percent or more for one or more nonattainment pollutants.
- Such emissions exceed *de minimis* threshold levels established in 40 CFR 93.153(b) for individual nonattainment pollutants or for pollutants for which the area has been redesignated as a maintenance area.

The *de minimis* threshold emission rates were established by USEPA in the General Conformity Rule to focus analysis requirements on those Federal actions with the potential to have "significant" air quality impacts. Table 4-1 presents these thresholds, by regulated pollutant. These *de minimis* thresholds are similar, in most cases, to the definitions for major stationary sources of criteria and precursors to criteria pollutants under the CAA's New Source Review (NSR) Program (CAA Title I). As shown in Table 4-1, *de minimis* thresholds vary depending upon the severity of the nonattainment area classification.

In addition to the *de minimis* emission thresholds, Federal PSD regulations define air pollutant emissions to be significant if the source is within 10 kilometers of any Federal Class I area (*e.g.* wilderness area greater than 5,000 acres or national park greater than 6,000 acres), and emissions would cause an increase in the concentration of any regulated pollutant in the Class I area of 1 µg/m³ or more (40 CFR 52.21(b)(23)(iii)). Although PSD rules apply only to stationary sources of emissions, for the purposes of this EA, such an impact to a Class I area would be considered to be a significant impact.

4.3.1 Proposed Action

Conformity. Because a maintenance area is affected by this Proposed Action, the USAF must comply with the Federal General Conformity Rule. To do so, calculations have been made to ensure that, given the changes in direct and indirect emissions of O₃ precursors (NO_x and VOCs), CO, and PM₁₀, the Proposed Action would be in conformity with CAA requirements. The Conformity Determination requirements specified in this rule can be avoided if the project nonattainment pollutant rates are below *de minimis* threshold levels for nonattainment pollutants and are not considered regionally significant. For

purposes of determining conformity in these maintenance areas, projected regulated pollutant emissions associated with the Proposed Action were estimated using available operations data and emissions information. The emission calculations and *de minimis* threshold comparisons are collectively presented in the Air Conformity calculations provided in Appendix D.

Construction Activities. The Proposed Action includes two construction projects on Buckley AFB: the construction of temporary modular facilities and a permanent DSOC facility with supporting parking areas. The construction projects would directly generate total suspended particles (TSP) and PM₁₀ emissions as fugitive dust from ground-disturbing activities (*e.g.*, grading, demolition, soil piles) and combustion of fuels in construction equipment. Fugitive dust emissions would be greatest during the initial site preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity.

The potential air quality impacts have been assessed based on the characteristics of the Proposed Action (*i.e.*, construction) and are presented below in Table 4-2.

Fugitive dust emissions for various construction activities were calculated using emission factors and assumptions published in USEPA's AP-42 Section 11.9 dated July 1998 and Section 13.2 dated September 1998. These estimates assume that 230 working days are available per year for construction (accounting for weekends, weather, and holidays).

Construction operations would also result in emissions of criteria pollutants as combustion products from construction equipment as well as evaporative emissions from architectural coatings and asphalt paving operations. These emissions would be of a temporary nature. The emissions factors and estimates were generated based on guidance provided in *Air Quality Thresholds of Significance* from the Sacramento Metropolitan Air Quality Management District (SMAQMD 1994).

Specific information describing the types of construction equipment required for a specific task, the hours the equipment is operated, and the operating conditions vary widely from project to project. For purposes of analysis, these parameters were estimated using established methodologies for construction and experience with similar types of construction projects. Combustion by-product emissions from construction equipment exhausts were estimated using USEPA's AP-42 emissions factors for heavy-duty, diesel-powered construction equipment.

Table 4-1. Conformity *de minimis* Emission Thresholds

Pollutant	Status	Classification	<i>de minimis</i> Limit (tpy)
Ozone (measured as Nitrogen Oxides (NO _x) or Volatile Organic Compounds (VOCs))	Nonattainment	Extreme	10
		Severe	25
		Serious	50
		Moderate/marginal (inside ozone transport region)	50 (VOCs)/100 (NO _x)
		All others	100
	Maintenance	Inside ozone transport region	50 (VOCs)/100 (NO _x)
		Outside ozone transport region	100
Carbon Monoxide (CO)	Nonattainment/maintenance	All	100
Particulate Matter (PM ₁₀)	Nonattainment/maintenance	Serious	70
		Moderate	100
		Not Applicable	100
Sulfur Dioxide (SO ₂)	Nonattainment/maintenance	Not Applicable	100
Nitrogen Oxides (NO _x)	Nonattainment/maintenance	Not Applicable	100

Source: 40 CFR 93.153

tpy: tons per year

The construction emissions presented in Table 4-2 include the estimated annual emissions from construction equipment exhaust associated with the Proposed Action. As with fugitive dust emissions, combustion emissions would produce locally elevated air pollutant concentrations. Early phases of construction projects involve mostly heavy diesel equipment and earthmoving, resulting in higher NO_x and PM₁₀ emissions. Later phases of construction involve more light gasoline equipment and surface coating, resulting in more CO and VOC emissions. However, the effects would be temporary, fall off rapidly with distance from the proposed construction site, and would not result in any long-term impacts.

Vehicle Operations. Vehicle emissions are regulated by the Colorado Department of Public Health and Environment under the Colorado State Implementation Plan (SIP) through the Air Care Program. Calculations of air pollutant emissions from privately-owned vehicle (POV) commuting were based on the vehicle miles traveled (VMT), vehicle category or classification (e.g., light-duty gasoline vehicle), average vehicle speed measured in mph, average vehicle occupancy rate, and the USEPA approved pollutant emission factors. Emission factors from USEPA's mobile source emission model, MOBILE6 were used to estimate emissions from motor vehicles. The increase of 350 military and civilian personnel

associated with the Proposed Action represents less than four percent of the active duty, civilian, and contractor personnel at Buckley AFB. Emissions from employee motor vehicles are calculated to be approximately 50 tons per year (see Appendix D, page 24) and total annual emissions from the project are estimated to be approximately 68 tons per year, which is below the conformity *de minimis* thresholds.

Few, if any, additional or specialized government-owned vehicles (GOVs) would be required for implementation of the Proposed Action. Therefore, there would be negligible net change in GOV pollutant emissions currently occurring at Buckley AFB.

Analysis. As shown in Table 4-2, the Proposed Action would generate emissions increases below conformity *de minimis* limits as specified in 40 CFR 93.153. Because the emissions expected from the Proposed Action would not exceed *de minimis* levels, this action does not trigger the requirement to prepare a formal conformity determination report to demonstrate conformity with the General Conformity Rule. Appendix D details the emission factors, calculations, and estimates of construction-related emissions for the Proposed Action and alternatives. Local and regional pollutant impacts resulting from direct and indirect emissions from stationary emissions sources under the Proposed Action are addressed through Federal and state permitting program requirements under NSR regulations (40 CFR 51 and 52). As noted previously, Buckley AFB has appropriate permits in place and has met all applicable permitting requirements and conditions for specific stationary devices.

Buckley AFB has a history of complying with Federal and state air regulations. The proposed DSOC mission exercises would be consistent with exercises currently conducted at the Base. Therefore, there would be no adverse effects on air quality from the Proposed Action.

Although Eagles Nest Wilderness Area, Rocky Mountain National Park, and Florissant Fossil Beds are within 100 kilometers of Buckley AFB, the Proposed Action would be clearly below the 10 percent threshold for all criteria pollutants. Therefore, the Proposed Action would not have an adverse impact on Class I or Class II areas.

Table 4-2. Annual Construction Emissions from the Proposed Action at Buckley AFB

	NO_x¹ (tpy)	VOC¹ (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀¹ (tpy)
Metropolitan Denver Intrastate AQCR 1993 Target Year Emission Budget	116,502	129,662	871,835	65,039	37,394
Calendar Year 2004					
Construction	4.10	1.70	3.77	0.20	0.31
POVs	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>
Total	4.10	1.70	3.77	0.20	0.31
Percent of Target Year Emission Budget	0.0035%	0.0013%	0.0004%	0.0003%	0.0038%
Calendar Year 2005					
Construction	0.00	0.00	0.00	0.00	0.00
POVs	<u>1.76</u>	<u>1.79</u>	<u>25.32</u>	<u>0.13</u>	<u>1.56</u>
Total	1.76	1.79	25.32	0.13	1.56
Percent of Target Year Emission Budget	0.0015%	0.0014%	0.0029%	0.0002%	0.0042%
Calendar Year 2006					
Construction	0.00	0.00	0.00	0.00	0.00
POVs	<u>3.51</u>	<u>3.57</u>	<u>50.63</u>	<u>0.26</u>	<u>3.12</u>
Total	3.51	3.57	50.63	0.26	3.12
Percent of Target Year Emission Budget	0.0030%	0.0028%	0.0058%	0.0004%	0.0084%
Calendar Year 2007					
Construction	18.58	6.30	16.98	0.90	4.72
POVs	<u>3.51</u>	<u>3.57</u>	<u>50.63</u>	<u>0.26</u>	<u>3.12</u>
Total	22.09	9.88	67.62	1.17	7.84
Percent of Target Year Emission Budget	0.0190%	0.0076%	0.0078%	0.0018%	0.0210%
Calendar Year 2008					
Construction	18.58	6.30	16.98	0.90	4.72
POVs	<u>3.51</u>	<u>3.57</u>	<u>50.63</u>	<u>0.26</u>	<u>3.12</u>
Total	22.09	9.88	67.62	1.17	7.84
Percent of Target Year Emission Budget	0.0190%	0.0076%	0.0078%	0.0018%	0.0210%

Source: USEPA 2004

Note: ¹ Denotes maintenance pollutant in Metropolitan Denver Intrastate AQCR.

tpy: tons per year

4.3.2 Alternative 1

Construction and operation air emissions would be the same as the Proposed Action. The proposed DSOC mission exercises would be consistent with exercises currently conducted at the Base. Therefore, there would be no direct or indirect adverse effects on air quality from Alternative 1.

4.3.3 Alternative 2

Construction and operation air emissions would be the same as the Proposed Action. The proposed DSOC mission exercises would be consistent with exercises currently conducted at the Base. Therefore, there would be no direct or indirect adverse effects to air quality from Alternative 2.

4.4 Geological Resources

4.4.1 Proposed Action

Short-term direct effects on soils would be expected under the Proposed Action from construction and demolition activities such as grading, excavating, and recontouring of the soil. Coverage under the *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges From Construction Activities*, site-specific Sediment and Erosion Control Plans, and Storm Water Pollution Prevention Plans (SWPPPs) are required and would be prepared to minimize potential erosion and sedimentation during the construction phase. Soil removed during the project would be disposed of at an appropriate off-site location. Implementation of best management practices (BMPs) during construction activities would limit adverse indirect effects during construction. Fugitive dust generated during construction activities would be minimized by watering and soil stockpiling, thereby reducing the total amount of soil exposed to negligible levels.

Under the Proposed Action, approximately 4.5 acres of soil classified in the Fondis-Weld association would be permanently disturbed as a result of excavation for the below-ground floor or establishment of impervious surfaces. Excavation would not alter the topography, but would result in the permanent loss of some surficial geology. However, this would not directly or indirectly impact regional geology. Therefore, no significant impacts on geologic resources would be expected under the Proposed Action.

4.4.2 Alternative 1

Short-term direct effects on soils would be expected under Alternative 1 from construction and demolition activities such as grading, excavating, and recontouring of the soil. However, as discussed for the Proposed Action, *NPDES General Permit for Storm Water Discharges From Construction Activities*, site-

specific Sediment and Erosion Control Plans, SWPPPs, and soil watering and stockpiling would be implemented to minimize potential erosion and sedimentation during the construction phase, thereby reducing the total amount of soil exposed to negligible levels.

Under Alternative 1, approximately one acre of soil classified in the Fondis-Weld association and 3.5 acres of soil classified in the Renohill-Buick-Little association would be permanently disturbed as a result of excavation for the below-ground floor or establishment of impervious surfaces. Excavation would not alter the topography, but would result in the permanent loss of soils and some surficial geology. There would be no direct or indirect impact on regional geology. There would also be no unmitigated construction effects on sensitive soil types. Therefore, no significant impacts on geologic resources would be expected under Alternative 1.

4.4.3 Alternative 2

Short-term direct effects on soils would be expected under Alternative 2 from construction and demolition activities such as grading, excavating, and recontouring of the soil. However, as discussed for the Proposed Action, *NPDES General Permit for Storm Water Discharges From Construction Activities*, site-specific Sediment and Erosion Control Plans, SWPPPs, and soil watering and stockpiling would be implemented to minimize potential erosion and sedimentation during the construction phase, thereby reducing the total amount of soil exposed to negligible levels.

Under Alternative 2, approximately one acre of soil classified in the Fondis-Weld association and 3.5 acres of soil classified predominantly as the Renohill-Buick-Little association would be permanently disturbed. This disturbance would result from excavation for the below-ground floor or the establishment of impervious surfaces. Soils classified in the Alluvial Land-Nunn association, found in the riparian corridor of East Toll Gate Creek, would be avoided. Excavation would not alter the topography, but would result in the permanent loss of soils and some surficial geology. There would be no direct or indirect impact on regional geology. There would also be no unmitigated construction effects on sensitive soil types. Therefore, no significant impacts on geologic resources would be expected under Alternative 2.

4.5 Water Resources

4.5.1 Proposed Action

The Proposed Action does not involve the use of groundwater or surface water and, therefore, would have no direct or indirect impact on water availability to existing users or interfere with the water supply. Water supply is discussed further in Section 4.9, Infrastructure.

The Proposed Action would have no industrial discharges to surface water. Storm water runoff would be the only discharge to surface water which has the potential for indirect, adverse effects on surface water resources, including storm water conveyances such as drainage ditches. However, the proposed modular units and permanent facility would be located approximately one mile from the ephemeral East Toll Gate Creek. Site-specific Sediment and Erosion Control Plans and SWPPPs would be prepared to minimize potential erosion and sedimentation during the construction phase. The SWPPP includes BMPs for erosion control (such as the storage of removed soils, good housekeeping practices, controlling off-site vehicle tracking of soils, silt fencing, sediment traps, application of water sprays, and revegetation at disturbed areas) and would also reduce potential adverse effects related to water quality. Spill prevention, control, and countermeasure procedures would also reduce the potential for any hazardous substances used during construction or operation to infiltrate underlying aquifers or surface waters.

In addition, all construction projects would conform to the *Engineering Technical Letter 03-1: Storm Water Construction Standards*, which prescribes procedures and practices to eliminate or minimize storm water pollution from USAF construction activities. Adherence to proper engineering practices and applicable codes and ordinances would reduce storm water runoff-related effects to a level of insignificance. Erosion and sedimentation controls would be in place during construction to reduce and control siltation or erosion effects on areas outside of the construction site. Construction activities would require the use of water for dust suppression. The volume of water that would be used for dust control would be minimal, and no runoff would be expected to result from this process. Following completion of construction, stabilization measures, such as revegetation, would be implemented to prevent long-term degradation of water resources from soil exposure.

The permanent facility in the Proposed Action would create approximately two acres of new impervious surfaces. A storm event producing between 0.2 and 0.5 inches of precipitation on two acres of impervious surface would generate between 56 and 139 yd³ of storm water runoff (WRCC 2004). The storm water drainage ditch north of Building 490 would have to be rerouted around the proposed permanent facility, and would be sized to handle runoff from the increased storm water runoff from new

impervious surfaces. Post-construction storm water pollution controls would be incorporated into the design as required by the *General Permit for Storm Water Discharges from Federal Facility Small Municipal Separate Storm Sewer Systems (MS4)* permit number COR04208f. The DSOC would be outside the 100-year floodplain and construction and operation of the facilities would have no direct or indirect impact on floodplains. In addition to increased storm water runoff, operation of an additional chiller at the proposed facility would both consume and discharge water to the sanitary sewer system. Operation of the proposed facility would not result in any discharges directly to surface or ground waters. Given all of these considerations, the Proposed Action would have no significant impacts on water resources.

4.5.2 Alternative 1

Alternative 1 would have no industrial discharges to surface water. Storm water runoff would be the only discharge to surface water which has the potential for indirect, adverse effects on surface water resources, including storm water conveyances such as drainage ditches. Under this alternative, the proposed modular units would be located approximately 1 mile from the intermittent East Toll Gate Creek, and their construction and operation would not directly or indirectly affect surface waters. The proposed permanent facility would be northeast of the RTF, approximately 2,000 feet south of Sand Creek and approximately 2,000 feet east of Williams Lake. As with the Proposed Action, the implementation of site-specific Sediment and Erosion Control Plans, SWPPPs, and spill prevention, control, and countermeasure procedures would reduce the potential for impacts on surface water and groundwater resources. All construction projects would conform to the *Engineering Technical Letter 03-1: Storm Water Construction Standards*.

The permanent facility would create approximately two acres of new impervious surfaces. A storm event producing between 0.2 and 0.5 inches of precipitation on two acres of impervious surface would generate between 56 and 139 yd³ of storm water runoff (WRCC 2004). The amount of new impervious area would be similar to the Proposed Action. The storm water drainage system would be modified to handle runoff from these increased surfaces. Post-construction storm water pollution controls would be incorporated into the design as required by the *General Permit for Storm Water Discharges from Federal Facility Small Municipal Separate Storm Sewer Systems (MS4)* permit number COR04208f. In addition to increased storm water runoff, operation of an additional chiller would both consume and discharge water to the sanitary sewer system. Operation of the modular and permanent facilities would not result in any discharges directly to surface or ground waters. Under Alternative 1, the modular units and permanent facility would be outside the 100-year floodplain and the construction and operation of these facilities would not directly or indirectly affect floodplains.

4.5.3 Alternative 2

Alternative 2 would have no industrial discharges to surface water. Storm water runoff would be the only discharge to surface water which has the potential for indirect, adverse effects on surface water resources, including storm water conveyances such as drainage ditches. Alternative 2 might indirectly affect surface water and groundwater resources. Under this alternative, the proposed modular units would be located approximately one mile from the intermittent East Toll Gate Creek, and their construction and operation would not have direct effects on surface waters. The proposed permanent facility would be located northeast of the OSI compound, less than 500 feet south of East Toll Gate Creek. Any excavations necessary to install utilities would be routed to avoid the floodplain and creek, including hanging utilities from the bridge. Every effort would be made to avoid disturbing the floodplain and creek. If disturbing the floodplain and/or creek would be necessary, all practical BMPs would be utilized to minimize the disturbance. The proposed permanent facility might also have a greater impact to Base storm water systems than the Proposed Action or Alternative 1 due to its close proximity to the floodplain. Implementation of site-specific Sediment and Erosion Control Plans and SWPPPs, as well as spill prevention, control, and countermeasure procedures, would reduce the potential for impacts on surface and groundwater resources. All construction projects would conform to the *Engineering Technical Letter 03-1: Storm Water Construction Standards*. The amount of new impervious area would be similar to the Proposed Action. The permanent facility would create approximately two acres of new impervious surfaces. A storm event producing between 0.2 and 0.5 inches of precipitation on two acres of impervious surface would generate between 56 and 139 yd³ of storm water runoff (WRCC 2004). The storm water drainage system would be modified to handle runoff from these increased surfaces. Post-construction storm water pollution controls would be incorporated into the design as required by the *General Permit for Storm Water Discharges from Federal Facility Small Municipal Separate Storm Sewer Systems (MS4)* permit number COR04208f. Under this alternative, the proposed permanent facility would occur within 500 feet of the 100-year floodplain associated with East Toll Gate Creek, and would have to be sited in such a way as to not impact floodplain resources. Alternative 2 might impact ground water resources due to its close proximity to East Toll Gate Creek. Depending on the depth to the water table, pumping of groundwater might be necessary during construction activities. In addition to increased storm water runoff, operation of an additional chiller would both consume and discharge water to the sanitary sewer system. Operation of the modular and permanent facilities would not result in any discharges directly to surface or ground waters.

4.6 Biological Resources

This section evaluates the potential effects on the biological resources under the Proposed Action and alternatives. This EA will use a habitat perspective to provide a framework for analysis of general classes of effects (*i.e.*, removal of critical habitat, noise associated with training, human disturbance).

Ground disturbance and noise associated with construction activities might directly or indirectly cause potential effects on biological resources. Direct effects from ground disturbance were evaluated by identifying the types and locations of potential ground-disturbing activities in relation to important biological resources. Habitat removal and damage or degradation of habitats might be associated with ground-disturbing activities.

Noise associated with a proposed action might be of sufficient magnitude to result in the direct loss of individuals and reduce reproductive output within certain ecological settings. Ultimately, extreme cases of such stresses could have the potential to lead to population declines or local or regional extinction. To evaluate effects, considerations were given to the number of individuals or critical species involved, amount of habitat affected, relationship of the area of potential effect to total critical habitat within the region, type of stressors involved, and magnitude of the effects.

4.6.1 Proposed Action

Vegetation. Construction of the modular and permanent facilities would directly impact vegetation. Vegetation at the proposed location of the temporary modular units and the permanent facility under the Proposed Action has been mapped as crested wheatgrass. However, this area has been disturbed by construction and demolition activities and by prairie dogs which have created sparse vegetation conditions. After the construction of the permanent facility, the modular units, their foundations, and associated improvements would be removed. The area would be regraded as necessary and the area revegetated and restored to conditions as they existed prior to the construction of the modular units.

There are two seeded, maintained drainage swales at the site of the Proposed Action. The swale on the northern edge of the property supports some wetland vegetation, such as cattails (*Typha* spp.), near the culvert opening. The Proposed Action would be designed to avoid the drainage swale and wetland vegetation to the greatest extent practical. If the Proposed Action cannot be designed to avoid impacting the drainage swale and wetland vegetation, the loss of wetland vegetation would be mitigated by planting a larger amount of wetland vegetation in a new drainage swale. The remainder of the property consists of lawn and landscaped areas invaded by prairie dogs, an access road, and paved parking areas. Operation

of the proposed modular units and permanent facility would have no direct or indirect effects on vegetation.

Wildlife. The area associated with the Proposed Action consists of previously disturbed, landscaped, paved, or mowed lands that provide marginal habitat for wildlife. Vegetation found in the drainage ditch is maintained and is unlikely to provide important habitat for wildlife. Although some wildlife may be displaced, the large undeveloped areas on the Base would provide adequate habitat for such individuals. Short-term, minor, direct, adverse effects from construction noise and heavy equipment use would occur during construction. However, wildlife would quickly recover once the construction activities ceased and revegetation was successful. Therefore, effects on wildlife would not be significant in the short- or long-term. Operation of the proposed modular units and permanent facility would have no direct or indirect effects on wildlife.

Sensitive Species. Of the sensitive species discussed in Section 3.6 that are known to occur or have potentially suitable habitat at Buckley AFB, only the black-tailed prairie dog population would be directly affected by construction activities associated with the Proposed Action. Black-tailed prairie dogs were observed throughout the Proposed Action site. Although this species is a candidate for listing under the ESA, and as a special concern species by the state of Colorado, it does not receive regulatory protection. However, the ESA recommends that all Federal facilities consider protecting candidate species. Under the Proposed Action, there would be a direct adverse effect on black-tailed prairie dogs due to the loss of habitat. The loss would be permanent. The prairie dogs would be managed per the Supplement to Environmental Assessment of Proposed Prairie Dog Management Practices at Buckley Air Force Base (June 2001). The Proposed Action would also have a minor, direct adverse effect on potential western burrowing owl habitat since they are not known to nest at the site of the Proposed Action. There is sufficient suitable habitat on and surrounding Buckley AFB for owls to find nesting sites upon their return from winter migration. Construction would begin after the owls have migrated south; if owls have nested on the site prairie dog removal or construction activities would be suspended until the young have fledged and are on their own. Nesting owls would not be disturbed. Operation of the DSOC would have no direct or indirect effects on sensitive species.

Wetlands. Construction and operation of the proposed modular units and the permanent facility would not have any effects on wetlands under the Proposed Action.

4.6.2 Alternative 1

Vegetation. Under Alternative 1, the permanent facility (northeast of the RTF) has been mapped as midgrass prairie. This vegetation is relatively higher quality, however, some disturbance, likely associated with construction of the RTF, is evident from small patches of bare ground in this area. The midgrass prairie plant community supported in the vicinity of the RTF is found throughout Buckley AFB, most notably in the southeastern portion of the Base. Therefore, the approximately 3.5 acres of vegetation that would be permanently removed to accommodate the proposed permanent facility would result in long-term, adverse, direct impacts on vegetation. Operation of the proposed modular units and permanent facility would have no direct or indirect effects on vegetation.

Wildlife. The midgrass prairie habitat in the vicinity of the RTF provides suitable habitat for birds, small and large mammals, and snakes. The noise from the construction equipment would cause wildlife dispersal. Dispersed species may relocate to areas where competition with other species for resources, such as food and cover, is higher. Short-term, minor, direct effects from construction noise and heavy equipment use would be anticipated during construction. However, wildlife would quickly recover once the construction activities ceased and revegetation was successful.

Under Alternative 1, it is anticipated that approximately 3.5 acres of midgrass prairie habitat would be lost as a result of building the permanent facility. This plant community is found throughout Buckley AFB, most notably in the southeastern portion of the Base, and it is likely that some wildlife would be dispersed to these other areas. However, the loss of this habitat would have long-term, minor, adverse effects on wildlife. Operation of the proposed modular units and permanent facility would have no direct or indirect effects on wildlife.

Sensitive Species. Under Alternative 1, effects on sensitive species would be identical to those described above for the Proposed Action. There would be a direct adverse effect on black-tailed prairie dogs due to the loss of habitat. The loss would be permanent. The prairie dogs would be removed prior to construction per the Supplement to Environmental Assessment of Proposed Prairie Dog Management Practices at Buckley Air Force Base (June 2001). Construction of the modular units would also have a minor, direct adverse effect on potential western burrowing owl habitat since they are not known to nest at the site. There is sufficient suitable habitat on and surrounding Buckley AFB for owls to find nesting sites upon their return from winter migration. Construction would begin after the owls have migrated south; if owls have nested on the site prairie dog removal or construction activities would be suspended until the young have fledged and are on their own. Nesting owls would not be disturbed. Adverse effects

would be less when compared to the Proposed Action. Operation of the DSOC at the Alternative 1 site would have no direct or indirect effects on sensitive species.

Wetlands. Construction and operation of the proposed modular units and the permanent facility would have no direct or indirect effects on wetlands.

4.6.3 Alternative 2

Vegetation. Three plant communities have been identified at the Alternative 2 site northeast of the OSI compound: crested wheatgrass, midgrass prairie, and cottonwood/willow (in the riparian corridor of East Toll Gate Creek). e2M planners conducted a review of historic aerial photography during a February 2004 site visit and concluded that the area just north of the OSI compound has never been developed. Therefore, the crested wheatgrass and midgrass prairie are higher quality habitat compared to other portions of the Base. Because the floodplain and riparian areas of East Toll Gate Creek would be avoided, impacts would only occur to the crested wheatgrass and midgrass prairie plant communities. These plant communities are found throughout the Base in both developed and undeveloped areas. The approximately 3.5 acres of vegetation that would be permanently removed to accommodate the permanent facility would result in long-term, direct adverse effects on vegetation. Operation of the modular and permanent facilities would have no direct or indirect effects on vegetation.

Wildlife. The crested wheatgrass, midgrass prairie, and cottonwood/willow habitat supported at the Alternative 2 site provide very diverse habitat for wildlife. Noise from the construction equipment would cause wildlife dispersal in these areas. Dispersed species might relocate to areas where competition with other species for resources, such as food and cover, is higher. Short-term, minor, direct adverse effects from construction noise and heavy equipment use would be anticipated during construction. However, wildlife would quickly recover once the construction activities ceased and revegetation was successful.

Under Alternative 2, it is anticipated that approximately 3.5 acres of crested wheatgrass and midgrass prairie habitat would be lost (the cottonwood/willow habitat would not be disturbed) as a result of building the permanent facility. These plant communities are found throughout Buckley AFB and it is likely that some wildlife would be dispersed to these other areas. However, the loss of this habitat would have long-term, direct adverse effects on wildlife. Operation of the modular units and permanent facility would have no direct or indirect effects on wildlife.

Sensitive Species. Under Alternative 2, effects on sensitive species would be identical to those described above for the Proposed Action. There would be a direct adverse effect on black-tailed prairie dogs due to the loss of habitat. The loss would be permanent. The prairie dogs would be removed prior to

construction per the Supplement to Environmental Assessment of Proposed Prairie Dog Management Practices at Buckley Air Force Base (June 2001). There is also the potential to directly affect potential habitat for the western burrowing owl. Adverse effects would be less when compared to the Proposed Action. Some signs of black-tailed prairie dog activity (burrows and associated patches of sparse vegetation) were also observed northeast of the OSI at the Alternative 2 site. However, the area near the OSI does not sustain as high a population as is found elsewhere on the Base, as indicated on maps depicting black-tailed prairie dog population density (BAFB 2003g). Operation of the DSOC at the Alternative 2 site would have no direct or indirect effects on sensitive species.

Wetlands. Construction and operation of the proposed modular units and the permanent facility would have no direct or indirect effects on wetlands.

4.7 Cultural Resources

Analysis of potential impacts on cultural resources considers various impacts. Adverse impacts might include physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's significance; introducing visual or audible elements that are out of character with the property or altering its setting; neglecting the resource to the extent that it deteriorates or is destroyed; or the sell, transfer, or lease of the property out of agency ownership (or control) without adequate legally enforceable restrictions or conditions to ensure preservation of the property's historic significance.

4.7.1 Proposed Action

The most relevant impacts on cultural resources at Buckley AFB would be due to direct impacts from ground disturbing activities associated with the anticipated construction of the proposed temporary modular and permanent facilities.

No NRHP-eligible or potentially eligible archaeological sites are within the APE for the Proposed Action. Therefore archaeological resources would not be directly or indirectly affected.

No NRHP-eligible or potentially eligible districts or landscapes are within the APE for the Proposed Action. Therefore historic districts or landscapes would not be directly or indirectly affected.

Four NRHP potentially eligible structures are in the vicinity of the APE for the Proposed Action. However, the Proposed Action would not directly or indirectly affect the structures' exteriors. Further, the permanent facility would be the same height and have a similar exterior appearance as the existing

structures in the fenced, high security area. Therefore, the Proposed Action would not alter or visually impact the structures' historic setting.

The Proposed Action would result in no adverse effects on historic structures, districts, landscapes, or traditional cultural properties.

4.7.2 Alternative 1

Similar to the Proposed Action, there are no NRHP-eligible or potentially eligible archeological sites, historic districts or landscapes within the APE for Alternative 1. Therefore archaeological and historic resources would not be directly or indirectly affected. Four NRHP potentially eligible structures are in the vicinity of the APE for the temporary modular units. However, the modular units would not affect the structures' exteriors and they would not be higher than the current buildings. Therefore, Alternative 1 would not alter or visually impact the structures' historic setting. Alternative 1 would result in no direct or indirect impacts on historic structures, districts, landscapes, or traditional cultural properties.

4.7.3 Alternative 2

Similar to the Proposed Action, there are no NRHP-eligible or potentially eligible archaeological sites, historic districts, or landscapes within the APE for Alternative 2. Therefore archaeological and historic resources would not be directly or indirectly affected. Four NRHP potentially eligible structures are in the vicinity of the APE for the temporary modular units. However, the modular units would not directly or indirectly affect the structures' exteriors and they would not be higher than the current buildings. Therefore, Alternative 2 would not alter or visually impact the structures' historic setting. Alternative 2 would result in no direct or indirect impacts on historic structures, districts, landscapes, or traditional cultural properties.

4.8 Socioeconomics and Environmental Justice

Elements of the Proposed Action include two construction projects: operation of the DSOC and changes in the number of military, civilian, and contractor personnel assigned to Buckley AFB.

The significance of construction expenditure impacts is assessed in terms of direct effects on the local economy and related effects on other socioeconomic resources (*e.g.*, housing). The magnitude of potential impacts can vary greatly, depending on the location of a proposed action. For example, implementation of an action that creates ten employment positions might be unnoticed in an urban area, but may have significant impacts in a rural region. If potential socioeconomic changes were to result in

substantial shifts in population trends or in adverse effects on regional spending and earning patterns, they would be considered significant.

This section identifies potential economic and social impacts that might result from the proposed action. The methodology for the economic impact assessment is based on the Economic Impact Forecast System (EIFS) developed by the DOD in the 1970s to efficiently identify and address the regional economic effects of proposed military actions (EIFS 2001). EIFS provides a standardized system to quantify the impact of military actions and to compare various options or alternatives in a standard, nonarbitrary approach. The EIFS assesses potential impacts on four principal indicators of regional economic impact: business volume, employment, personal income, and population. As a “first tier” approximation of effects and their significance, these four indicators have proven very effective. The methodology for social impacts is based on the *Guidelines and Principles for Social Impact Assessment*, developed by an inter-organizational committee of experts in their field (NOAA 1994). Finally, this section also evaluates environmental justice concerns to include disproportionate impacts on low-income or minority populations.

For the purpose of analyzing impacts on socioeconomics and environmental justice, there is no appreciable difference between the Proposed Action, Alternative 1, and Alternative 2. Therefore, evaluation of these three alternatives was combined.

4.8.1 Proposed Action and Alternatives

Social and Economic Condition. The Proposed Action and Alternatives 1 and 2 involve the net gain of 350 personnel. The additional personnel needed to support the Center would increase the amount of Base personnel by approximately four percent. Therefore, the increased number of personnel at Buckley AFB resulting from the Proposed Action and Alternatives 1 and 2 is expected to have a negligible impact on the local workforce.

Construction costs associated with the Proposed Action and Alternatives 1 and 2 is estimated to be between \$75 and \$150 million for 2007 through 2009, which would have a direct, beneficial impact on the local economy (EIFS 2004). Construction workers would primarily be drawn from the local workforce, resulting in beneficial, short-term direct effects on the local economy. Census data for 2000 showed that there are 2,277 and 18,865 employees working in the construction industry within the ROI and in Arapahoe County, respectively (U.S. Bureau of Census 2000). The number of construction workers required for the proposed construction projects is relatively small compared to the available work force in the ROI, and should be adequate without impacting local employment. Indirect impacts from the

estimated two year construction phase would generate an additional \$206 million from the purchase of construction materials and related supplies and services from local suppliers (EIFS 2004).

Indirect effects from the proposed construction projects are expected to be short-term and beneficial on local employment and the local economy; no permanent or long-term effects on employment, population, personal income, or poverty levels; or other demographic or employment indicators in the Aurora City/Arapahoe County would be expected from construction.

It has been estimated that each job created at a USAF installation generates additional jobs within the region, due to the many companies that supply goods and services to the Base and to support Base personnel. Therefore, the number of jobs created indirectly by the operation of the DSOC is estimated to be 568. This would represent an increase of about 0.1 percent of the Aurora City/Arapahoe County workforce. This number of new workers under the Proposed Action and Alternatives 1 and 2 would not statistically affect unemployment rates in the area.

Changes in economic factors can also impact the social fabric of a community. For example, increases in employment could stimulate the need for new housing units, and, as a result, increased demand for community and social services such as primary and secondary education, fire and police protection, and health care. The Proposed Action and Alternatives 1 and 2 would stimulate a minimal change in population size or distribution and would minimally increase employment and the local economy. Demand for new housing units and other social services would also be minimally affected. Currently there are 16,573 households in the ROI (U.S. Bureau of Census 2000). Under the Proposed Action, the addition of 350 personnel would result in the demand for approximately 2 percent more households in the ROI. Assuming each of the new 350 workers brought two new children into the Aurora Public School District, the addition of 700 new students would represent a 2.2 percent increase in school enrollment. Since the workers would likely be more dispersed throughout the Denver Metropolitan Area, the effect would likely be less and not have a significant impact on local services.

A construction or development project can also affect social conditions if they involve a change in land use or development of previously undeveloped or “open” spaces. The Proposed Action and Alternatives 1 and 2 would not substantially change land use on Buckley AFB (only minimal amounts of land designated as open space might be affected). Any changes to land use under the Proposed Action or Alternative 1 would be imperceptible to the public. Under Alternative 2, neighborhoods to the south would have their viewshed impacted from a largely rural view towards a stream to the permanent facility. Residents in the adjacent neighborhood would notice the land use change. Therefore, no effects on social

conditions would be anticipated under the Proposed Action and Alternative 1, and minor adverse effects under Alternative 2.

Environmental Justice. As discussed in Section 3.8, the USAF has issued guidance on environmental justice analysis for EAs. To comply with EO 12898, ethnicity and poverty status in the study area have been examined and compared to state and national statistics to determine if minority or low-income groups could be disproportionately affected by the Proposed Action. The review indicates that residents living within census bureau tracts 83.09 and 70.08 have lower per capita incomes, a higher unemployment rate, and a higher percent of residents living below the poverty level than county or state averages (U.S. Bureau of Census 2000). The review also indicates that the percentage of minority residents is somewhat higher than county or state averages.

Potential adverse impacts from the new construction activities would occur on the Base, with no adverse impacts anticipated off-Base. The environment around Buckley AFB is influenced by USAF operations, land management practices, vehicle traffic, and emissions sources outside the Base. Increased traffic from construction activities would affect local air quality, but the impacts would be dispersed and affect area residents and Base employees equally. The construction projects would be performed by outside contractors with employees living within the Denver metropolitan area, Arapahoe County, and the ROI. No disproportionate impacts on minority or low-income populations from the Proposed Action or Alternatives 1 and 2 were identified.

In addition, EO 13045 requires that Federal agencies identify and assess environmental health and safety risks that might disproportionately affect children. The Proposed Action and Alternatives 1 and 2 would not likely pose any adverse or disproportionate environmental health or safety risks to children living in the vicinity of the Base. The likelihood of the presence of children at the site where the Proposed Action or Alternatives 1 and 2 would occur on Base is considered minimal, which further limits the potential for effects. Therefore, no significant adverse effects would be expected.

4.9 Infrastructure

Effects on infrastructure are evaluated for their potential for disruption or improvement of existing levels of service and additional needs for energy and water consumption, wastewater systems, and transportation patterns and circulation. Effects might arise from physical changes to circulation, construction activities, introduction of construction-related traffic on local roads or changes in daily or peak-hour traffic volumes, and utility needs created by changes related to Base activities.

4.9.1 Proposed Action

Transportation. The construction phase of the Proposed Action would require delivery of materials to and removal of debris from construction sites. Heavy vehicles are frequently on Base roads and construction traffic would comprise a small percentage of the total existing traffic. Also, many of the vehicles would be driven to and kept on-site for the duration of construction, resulting in relatively few additional trips. Furthermore, direct impacts on traffic volume would be temporary and no long-term direct or indirect effects to on- or off-Base transportation would result.

As stated previously, the addition of 350 new personnel at Buckley AFB represents an approximate four percent increase. However, the additional 350 personnel would be spread over three work shifts so that approximately 120 additional workers would enter one of Buckley AFB's three gates during the morning peak hour. With carpooling and a staggered work schedule, the actual number of vehicles may be less. It is assumed that each gate can handle approximately 200 to 250 vehicles during the peak 15-minute period of 6:45 to 7:00 a.m. (600 to 750 total), or between 2,400 and 3,000 vehicles in one hour. The most recent study available found 345 vehicles processed during the peak 15-minute period, so the existing infrastructure should be sufficient to accommodate the additional vehicles (BAFB 2003d). Potential congestion could be mitigated by further increasing gate processing capabilities.

An additional 350 vehicles per day represents a six percent increase in AADT volume on 6th Avenue near the entrance to the Base. During the average peak hour, the addition of 120 vehicles represents a nearly 19 percent increase in traffic volume on 6th Avenue near the entrance to the Base. However, the current AADT and DHV are relatively low. Therefore, the Proposed Action would have a minor direct effect on traffic around the Base. In addition, the Proposed Action would have a negligible, indirect effect on traffic from increased service vehicles and personnel to support the 350 new workers.

Electricity. The operation of the proposed modular units and permanent facility would require additional electrical supply to Buckley AFB; however, the modular units would be taken off-line once the permanent facility is completed and staff are transferred. The electricity needed for operating the modular and permanent facilities, which would predominantly house office spaces, would not put an unnecessary burden on Xcel Energy's distribution system or their ability to provide electrical service. Therefore, negligible effects would be anticipated.

Natural gas: The operation of the proposed modular units and permanent facility would consume additional natural gas for boilers. Based on the annual use of natural gas at Building 490, the proposed permanent facility is estimated to use an additional 1.35 million cubic feet of gas, or approximate 1

percent increase in Buckley AFB's natural gas use (BAFB 2002e). The projected 1 percent increase in natural gas usage is negligible adverse impact.

Water Supply. Additional water supply would be required for both the modular facilities and permanent facilities, while an additional water chiller would be brought on-line to support the proposed permanent facility (this chiller would not be needed for the modular units). It has been estimated that, to accommodate the additional staff and operation of an additional chiller, approximately 7,000 gallons of additional water would be consumed on a daily basis (approximately 210,000 gallons per month). In relation to the 0.19 million gallons consumed daily (between September 19, and April 11, 2002), this represents a nominal increase (less than 4 percent) in water supply required at Buckley AFB. Therefore, negligible direct effects on the City of Aurora municipal water distribution and supply system would be expected.

Solid Waste. Generation of solid, nonhazardous waste and construction debris would increase as a result of construction, but would represent short-term direct impacts. Wastes would be collected in dumpsters and routinely transported to and disposed of by a private contractor. Every effort would be made to recycle or reuse recyclable construction and other materials to avoid their automatic disposal.

The addition of 350 staff members would represent an approximate four percent increase in the number of staff at Buckley AFB that would contribute to solid waste generation. In FY 2002, approximately four tons (8,000 pounds) of solid waste were generated daily, which is approximately 0.9 pounds per person per day, considering 8,950 employees. Hence, it is estimated that approximately 315 additional pounds of solid waste would be generated by the 350 new employees, which represents a nominal increase (less than 4 percent) when compared to the 8,000 pounds of solid waste generated per day in FY 2002. The additional 350 staff members would be included in Buckley AFB's Recycling Program. Therefore, the increased solid waste generation that would occur once the proposed facilities are operational would have a negligible direct effect on solid waste disposal services and capabilities at Buckley AFB and the Denver-Arapahoe Disposal Site.

Wastewater Treatment. It is estimated that the three chillers currently in operation at Buckley AFB discharge approximately 15,000 gallons of water per day (approximately 5,000 gallons each). Subtracting this total from the total discharge from the Base on a daily basis (based on approximately 185,543 gallons per day between July and September 2002), it is estimated that the current Base population of 8,950 discharges approximately 170,000 gallons per day. This equates to approximately 19 gallons per person per day. The additional 350 staff members required to operate the proposed modular and permanent facilities would therefore increase water discharges by approximately 6,650 gallons per day. An

additional chiller would discharge approximately 5,000 gallons per, for a total of 11,650 gallons per day, or an increase of 6.3 percent. The Wastewater Contribution Permit for Buckley AFB would be amended to accommodate the additional discharges from the chiller, resulting in insignificant impacts. The Metro Wastewater Reclamation District treatment plant would experience a negligible direct effect from this additional discharge, as it currently has a hydraulic capacity of 185 MGD, but only treats between 140 and 156 MGD. Therefore, there would be negligible direct and indirect effects on the wastewater treatment system from the Proposed Action.

4.9.2 Alternative 1

Since the Alternative 1 site has fewer facilities than the Proposed Action site, this site would require an increase in pipes and other conduit for water, wastewater, communications, electric, and gas. Excavations for new electric, water, and waste water utilities would be coordinated and routed to avoid ERP Site 5.

Transportation. Transportation-related impacts under Alternative 1 would be the same as those identified for the Proposed Action.

Electricity. Consumption of electricity under Alternative 1 would be the same as under the Proposed Action.

Natural gas. Consumption of natural gas under Alternative 1 would be the same as under the Proposed Action.

Water Supply. Consumption of water under Alternative 1 would be the same as under the Proposed Action. Construction of a chiller for the permanent facility might be required under this alternative.

Solid Waste. Generation of solid, nonhazardous waste and construction debris would be the same as under the Proposed Action.

Wastewater Treatment. Generation of wastewater would be the same as under the Proposed Action.

4.9.3 Alternative 2

Since the Alternative 2 site has fewer facilities than the Proposed Action site, this site would require an increase in pipes and other conduit for water, wastewater, communications, electric, and gas. The Alternative 2 site, which is northeast of the OSI, would utilize existing utility corridors that serve the OSI facility and that do not cross ERP Site 3, Base landfill.

Transportation. Transportation-related impacts under Alternative 2 would be similar to those identified for the Proposed Action, with the exception of increased on-Base disruption due to the construction of new utilities.

Electricity. Consumption of electricity under Alternative 2 would be the same as under the Proposed Action.

Natural gas. Consumption of natural gas under Alternative 2 would be the same as under the Proposed Action.

Water Supply. Consumption of water under Alternative 2 would be the same as under the Proposed Action. Construction of a chiller for the permanent facility might be required under this alternative.

Solid Waste. Generation of solid, nonhazardous waste and construction debris would be the same as under the Proposed Action.

Wastewater Treatment. Generation of wastewater would be the same as under the Proposed Action.

4.10 Hazardous Substances

4.10.1 Proposed Action

Hazardous Materials. Products containing hazardous materials would be procured and used during the proposed construction projects. It is anticipated that the quantity of products containing hazardous materials used during the construction of the DSOC facilities would be minimal and their use would be of short duration. Construction equipment that would be used in the Proposed Action contains fuel, lubricating oils, hydraulic fluid, and coolants that could be a regulated hazardous substance if they spilled or leaked on the construction site. During project activities, contractors would be required to minimize the potential for a release of hazardous substances from all construction equipment, include daily inspection of equipment to ensure that there are no discharges, maintain appropriate spill containment material on site, and store all fuels and other materials in appropriate containers. Equipment maintenance activities would not be conducted on the construction site. Contractors would be responsible for submitting hazardous waste to the Hazardous Waste Program Manager (460 CES/CEV) for disposal. Therefore, the Proposed Action would not have adverse effects on hazardous materials management at Buckley AFB.

Six samples were collected from the fill material and submitted for chemical analysis, while seven samples were collected from the native soil and submitted for analysis. The samples were analyzed for

one or all of the following constituents: lead, total petroleum hydrocarbons–gasoline range organics (TPH-GRO), total petroleum hydrocarbons–diesel range organics (TPH-DRO), VOCs, polynuclear aromatic hydrocarbons(PAH), polychlorinated biphenyls (PCBs), and pesticides. Two of the samples collected from the fill material were found to contain the PAH benzo (a) pyrene in excess of the CDPHE Surface Soil Standard (MES 2003).

Hazardous Wastes. It is anticipated that the quantity of hazardous wastes generated from the proposed construction activities would be negligible. Contractors would be responsible for the disposal of hazardous wastes in accordance with Federal and state laws and regulations. Construction of the proposed facilities would not impact the Base's hazardous waste management program.

Asbestos Containing Materials. Specifications for the proposed construction activities and USAF regulations prohibit the use of ACM for new construction. As discussed in Section 3.10, locations within the area of known World War II-era development has the potential for asbestos to be present as (1) insulation on abandoned buried steamlines, (2) abandoned buried transite water lines, or (3) debris in surface and/or near surface soils remnant from building demolition.

A soil characterization investigation was conducted by Matrix Environmental Services, LLC (MES) within the Proposed Action area and the Alternative 1 site that included a review of aerial photographs, a soil boring program, and a laboratory analysis program. The intent of the investigation was to assess environmental conditions in surface and subsurface soils and, based upon this information, make recommendations regarding the site environmental conditions and the potential reuse of investigated soils for fill operations (MES 2003).

A total of 26 borings were advanced during the drilling program, 24 within the area where the Proposed Action construction sites will be located and 2 within the Alternate I site. Visual examination of the subsurface materials revealed the presence of fill material in 12 of the 24 boreholes. The fill material was characterized as a mix of native soil (*i.e.*, clay, silt, and sand) and pieces of wood chips, roofing tar paper, metal, concrete, and brick. Two of the samples were tentatively identified visually as containing asbestos fibers. However, of the thirteen samples submitted for analysis only one was found to contain trace levels (*i.e.*, 0.0003%) of chrysotile, an asbestos mineral (MES 2003).

Trace amounts of asbestos have been found and the potential exists for asbestos to be encountered during site preparation. Should ACM be discovered during site preparation and excavation, work would stop immediately and measures would be taken to secure the area and prevent the release of ACM. Buckley

AFB would coordinate with CDPHE to determine the appropriate measures and all Federal, state, and local regulations would be followed for proper remediation and disposal.

Radon. Under the Proposed Action, the DSOC Facility would be located in an area designated by the USEPA as a Zone 1 area (indoor average level greater than 4 pCi/L). Since the Proposed Action calls for a permanent structure with subterranean levels, all inhabitable space placed below grade should be monitored and mitigation equipment installed as necessary.

Environmental Restoration Program. Under the Proposed Action, the proposed facilities would not be located near any ERP sites at Buckley AFB. There would be no impact on ERP sites as a result of the Proposed Action.

4.10.2 Alternative 1

Hazardous Materials. Products containing hazardous materials would be procured and used during the proposed construction projects under Alternative 1. It is anticipated that the quantity of products containing hazardous materials used during the construction would be minimal and their use would be of short duration, similar to the Proposed Action.

Hazardous Wastes. It is anticipated that the quantity of hazardous wastes generated from proposed construction activities under Alternative 1 would be negligible, similar to the Proposed Action.

Asbestos Containing Materials. Specifications for the proposed construction activities and USAF regulations prohibit the use of ACM for new construction. Since the permanent facility under Alternative 1 was not the site of World War II-era structures, the potential for buried ACM is low.

Radon. Under Alternative 1, impacts from radon would be similar to the Proposed Action.

Environmental Restoration Program. Under Alternative 1, the construction of the DSOC Facility would be approximately 1,000 feet from ERP Site FT-005 (see Figure 3-8). Site FT-005, the Former Fire Training Area Number 1, is located on the northeast side of the Base near the Base reservoir. The site was used from 1940 to 1950, and the size of the facility is unknown. Aviation gas was poured in an unlined bermed area, ignited, and then extinguished during training exercises. Site FT-005 requires further monitoring (460 ABW 2002). Every effort would be made to avoid disturbing ERP Site 5. If disturbing the Site is unavoidable, it would be done after an engineered analysis to have minimal release of materials, as well as safe practices for workers on site. It is unlikely that contamination would be encountered during these construction activities; however, should contamination be encountered, the

handling, storage, transportation, and disposal activities would be conducted in accordance with applicable Federal, state, and local regulations, AFIs, and Buckley AFB.

4.10.3 Alternative 2

Hazardous Materials. Products containing hazardous materials would be procured and used during the proposed construction projects under Alternative 2. It is anticipated that the quantity of products containing hazardous materials used during the construction would be minimal and their use would be of short duration, similar to the Proposed Action.

Hazardous Wastes. It is anticipated that the quantity of hazardous wastes generated from proposed construction activities under Alternative 2 would be negligible, similar to the Proposed Action.

Asbestos Containing Materials. Specifications for the proposed construction activities and USAF regulations prohibit the use of ACM for new construction. Since the permanent facility under Alternative 2 was not the site of World War II-era structures, the potential for buried ACM is low.

Radon. Under Alternative 2, impacts from radon would be similar to the Proposed Action.

Environmental Restoration Program. Under Alternative 2, the construction of the DSOC Facility would be upgradient but less than 500 feet from ERP Site 3 (see Figure 3-8). Site LF-003 is the location of the former Base landfill which was in operation from 1942. The landfill is capped with a native soil cover and encompasses approximately 11 acres. Disposal of industrial waste such as solvents, paints, and pesticides ended in 1968. Disposal of municipal refuse and construction debris may have continued until 1992. Monitoring is currently going on at Site LF-003 through FY 2008. It is anticipated that a remedy in place will be verified at the site with the additional investigation and continued monitoring (460 ABW 2002). Every effort would be made to avoid disturbing ERP Site 3. If disturbing the Site is unavoidable, it would be done after an engineered analysis to have minimal release of materials, as well as safe practices for workers on site. While unlikely, should contamination be encountered during these construction activities, the handling, storage, transportation, and disposal activities would be conducted in accordance with applicable Federal, state, and local regulations, AFIs, and Buckley AFB.

4.11 No Action Alternative

Under the No Action Alternative, existing conditions would remain as is and none of the proposed projects would occur. If the No Action Alternative were carried forward there would be no change in or effects on noise, land use, air quality, geological resources, water, biological or cultural resources, socioeconomics and environmental justice, infrastructure, or wastes at Buckley AFB.

Noise. Under the No Action Alternative, there would be no effects on noise. The noise produced by aircraft activities would continue to dominate the noise metric at Buckley AFB.

Land Use. No Action Alternative would not affect land use at Buckley AFB; the current land uses would remain the same.

Air Quality. Under the No Action Alternative, the surrounding area would remain in maintenance and there would be no changes in air pollutant levels.

Geological Resources. The No Action Alternative would not affect geological resources at Buckley AFB. Since the construction activities would not occur, there would be no disturbances to geological resources.

Water Resources. Under the No Action Alternative, there would be no changes in water resources from the baseline condition at Buckley AFB.

Biological Resources. Under the No Action Alternative, there would be no changes in vegetation, wildlife or sensitive species.

Cultural Resources. No effects would be expected under the No Action Alternative since there would be no change to the existing known archaeological, historical, and cultural resources.

Socioeconomics and Environmental Justice. The No Action Alternative would not affect employment, unemployment rates, and poverty or income levels for workers or residents around Buckley AFB or within the ROI. Under the No Action Alternative, the number of military, USAF civilian, and contractor employees at Buckley AFB would over the short-term remain stable at about 8,950 total employees (Sherva 2004a). There would be no changes in population growth or social services that could impact the social fabric of the community. The No Action Alternative would not cause any impacts on low-income or minority populations in Arapahoe County or the ROI, including residents within census bureau tracts 83.09 and 70.08.

Infrastructure. Under the No Action Alternative, there would be no change in baseline conditions and none of the proposed construction projects would occur. Therefore, there would be no impact on the Buckley AFB's infrastructure as a result of the No Action Alternative.

Hazardous Materials and Waste. Under the No Action Alternative, hazardous waste generation and procurement of products containing hazardous materials at the Base would remain the same.

The No Action Alternative does not meet the DOD's mission and objectives.

THIS PAGE INTENTIONALLY LEFT BLANK

5. Cumulative Impacts

Cumulative impacts on environmental resources result from incremental effects of proposed actions, when combined with other past, present, and reasonably foreseeable future projects in the area. Cumulative impacts can result from individually minor, but collectively substantial actions undertaken over a period of time by various agencies (Federal, state, and local) or individuals. Informed decisionmaking is served by consideration of cumulative impacts resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the reasonably foreseeable future.

5.1 Impact Analysis

Other projects evaluated in the cumulative impact analysis include planned or reasonably foreseeable projects both on-Base and off-Base. Planned or reasonably foreseeable projects were identified through a review of public documents and coordination with multiple agencies, and include both on- and off-Base activities.

Off-Base Activities. The land adjacent to Buckley AFB is split between developed, agricultural, and grassland conservation areas. The city of Aurora's 2003 Comprehensive Plan identifies three planning areas near the Base, each of which has its own identity and planned development pattern.

Colfax Corridor East of I-225. This area occurs adjacent to the northern boundary of Buckley AFB. The properties along Colfax Avenue tend to include older commercial uses, while many are vacant. The Northeast Colfax Area also includes the neighborhoods that are north and south of the corridor. Strategies for development in this area include

- Working to enhance open space corridors through additional dedications or other means.
- Confining non-residential uses to the corridor and to the planned industrial areas with the exception of neighborhood commercial or neighborhood institutional uses.
- Locating multi-family and attached housing in appropriate areas, including those adjacent to major streets, similar existing housing types, and other properties in the corridor.
- Promoting infill development in residential neighborhoods, maintaining the overall average residential density close to the current benchmarks.
- Encouraging and supporting the consolidation of parcels in the corridor to allow well-planned businesses or mixed-use projects.

There are no known developments that would occur in this strategic area at this time.

I-225 Corridor and City Center Strategic Area: This area is to the west of Buckley AFB and is associated with I-225 and the Aurora City Center. The I-225 corridor is the geographic center of the city of Aurora and on the east side of the highway, the Aurora Mall, Aurora City Place, and Abilene power corridors comprise a regional retail location. Midway in the corridor lies the Aurora City Center, historically planned as the city's "downtown." Strategies for development in this area include

- Continuing to work for transportation improvements including improvements to interchanges and Park-n-Ride locations.
- Developing a strategy to encourage adaptive reuse of empty big box retail buildings.
- Encouraging additional retail and medical-related office development in the corridor.
- Working to expand the restaurant node at Iliff Avenue.

Important development associated with the City Center includes the Aurora Municipal Center (completed), Arapahoe County administrative annex (complete), new ADT company office building, a 355-unit townhouse and elevator apartment complex (The Village), a 225-residential unit project (The Retreat at City Center), and a revitalization of the Aurora Mall. Additionally, the Regional Transportation Department purchased property for and begun construction on a new bus transfer facility at the City Center. The Regional Transportation Department plans to relocate its bus transfer facility here in 2004, and a light rail station could be constructed in the future. Finally, a much smaller single family housing development comprising 36.5 acres is under construction approximately 0.5 mile west of Buckley AFB (Aurora 2003).

E-470 Corridor Strategic Area: This area is adjacent to the eastern and extreme southern boundary of the installation and includes the prairie areas east of the developed portion of the city where development is expected through 2020. The major feature of this area is the E-470 corridor from Denver International Airport in the north to Douglas County in the south. E-470 is a major interstate running north-south near the eastern boundary of Buckley AFB. The 1999 completion of the E-470 segment serving the Buckley AFB area, and the subsequent Jewell Avenue Extension, provides the Base with major highways on both its east and west sides with access to both the north and south gates. The E-470 toll road also provides a major regional beltway connecting the northern and southern limits of the metropolitan area and linking Denver International Airport with the I-25 corridor, opening significant amounts of vacant land for development. The City of Aurora E-470 Corridor Land Use Study identifies regional activity centers and the following theme areas within the corridor (Aurora 2003):

- Airport Corporate
- Airport Commercial/Distribution

- Regional Retail/Commercial
- Light Industrial/Flex Office
- Buckley Research and Development
- Residential
- Regional Park and Open Space
- Recreation/Entertainment.

Strategies for development in the E-470 Corridor Strategic Area include locating a major office park, retail centers, and airport-related activities in the corridor and working with the counties to ensure that critical, undeveloped enclaves of land in the corridor are annexed into Aurora.

Planned land use for the entire area abutting the eastern boundary of Buckley AFB is to incorporate the Buckley Research and Development theme. Small-scale office development is allowed to complement the Research and Development land use, and limited industrial and commercial services are permitted. Regionally, a residential development comprising 435 acres is currently under construction within 0.5 mile of the southern limits Buckley AFB. Just east of this development, a 490-acre residential development is also under construction (Aurora 2003).

On-Base Activities. Buckley AFB has in place a Land Use Plan (LUP) to guide current and future development. Land use planning at Buckley AFB follows a rational and sequential decisionmaking process to reach a consensus for future growth while ensuring the efficient and compatible use of available land. The LUP establishes long-range goals and provides starting points to discuss land acquisition or disposal actions and siting of new facilities. This plan helps to define the best layout of land uses and transportation corridors to support functional effectiveness, efficiency, and compatibility. Both on and off-Base factors are considered. The LUP would guide infill development on currently vacant land, functional consolidation, and redesignation of land uses to accommodate doubling of the Base's current population (BAFB 2003a).

There are several existing and planned Capital Improvement Projects to support Buckley AFB's recent transition from an ANGB to an AFB and to facilitate future growth (BAFB 2002c). In November 2003, Buckley AFB completed an EA on the third phase of a four-phase, multiyear infrastructure upgrade and expansion program. Proposed activities included upgrades to the Base's natural gas and electrical distribution systems, water and wastewater systems, and the roadway and circulation system (BAFB 2003c). Other activities scheduled for 2004 include 13 projects totaling approximately 999,000 ft². These projects include adding to or altering access roads to the airfield and repairing parking lots.

Activities scheduled for 2005 include 16 projects totaling approximately 380,000 ft². These projects include athletic fields, Army Aviation Support Facility, and Vail Street improvements. Activities scheduled for 2006 include 19 projects totaling approximately 158,000 ft². These projects include an operations facility, youth center, and the demolition of warehouse 1011 (Sherva 2004b). Table 5-1 summarizes potential cumulative effects on resources from the Proposed Action, when combined with other past, present and future activities. As shown in Table 5-2, when air quality emissions from the Proposed Action are added to the above construction projects, the cumulative impacts would be considered clearly *de minimis* (see also Appendix D).

Table 5-1. Cumulative Effects on Resources

Resource	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
Noise	Aircraft activities are dominant noise source.	Aircraft activities are dominant noise source.	Short-term noise from construction activities; additional noise from increased traffic.	Base growth will result in increased traffic and noise.	Aircraft activities would be dominant noise source. Effect not significant.
Land use	Development of Aurora and Buckley AFB has extensively modified land use.	Military installation, commercial, residential, light industrial land uses.	No change in overall land use.	Expansion of Aurora east of Buckley AFB.	Proposed Action would not significantly induce further development on or around Buckley AFB.
Air Quality	Attainment/maintenance area for CO and maintenance area for O ₃ and PM ₁₀ .	Emissions from aircraft, vehicles, buildings.	Potential dust generation during soil removal, site grading and construction, increased vehicle traffic.	Growth at Buckley AFB and Aurora will result in increased traffic and emissions.	Continued attainment/maintenance area for CO and maintenance area for O ₃ and PM ₁₀ . Effect not significant.
Geological Resources	Past urban and Buckley AFB development has modified soils.	None.	Grading, excavating, and recontouring of the soil would result in further soil disturbance.	Continued development of Buckley AFB would locally impact soils.	Impacts would be permanent but localized. Effect not significant.
Water Resources	Surface water quality moderately impacted by development.	Surface water quality moderately impacted by development.	Potential sedimentation from construction activities and minor increase in percentage of impervious surface area.	Continued development of Buckley AFB would result in sedimentation from construction activities, and increase in impervious surfaces.	Increased impervious area would have minor impacts on storm water discharges and water quality. Proposed Action would not induce further degradation of water quality.

Table 5-1. Cumulative Effects on Resources (continued)

Resource	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
Biological Resources	Degraded historic habitat of sensitive and common wildlife species.	Buckley AFB and Aurora operations and development impact wildlife and their habitat.	Minor disturbance of vegetation by construction. Permanent loss of Black-tailed prairie dogs and habitat. Possible impact to the drainage swale and wetland vegetation.	Continued development of Buckley AFB would impact vegetation communities and wildlife habitat.	Permanent loss of vegetation and low quality habitat. Permanent loss of Black-tailed prairie dogs and habitat. If impact is unavoidable, the impact would be mitigated through increased planting of wetland vegetation in the new drainage swale. Effect not significant.
Cultural Resources	Possible destruction of unknown artifacts.	Identification and recordation of historic and cultural resources.	None.	None.	None.
Socioeconomics and Environmental Justice	Base contributes to local economic community.	Continued support of local economic community.	Minor contribution to local construction industry.	Continued development of Buckley AFB would impact local economy and services. .	Minor stimulation of local economic in context of increased development around Buckley AFB.
Infrastructure	Base has undertaken improvements to its traffic system.	Base continues to improve infrastructure system.	Increased vehicle traffic.	None.	Increased vehicle traffic would have a minor impact on the Level of Service.

Table 5-2. Cumulative Effects on Air Quality

2005	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀ (tpy)
Projected Emissions from 16 Planned Projects	8.00	3.00	4.00	0.90	32.00
Proposed Action	3.51	3.57	50.63	0.26	3.12
Total 2005 Emissions	11.51	6.57	54.63	1.16	35.12
<i>de minimis</i> Threshold	100	100	100	N/A	100

tpy: tons per year
N/A: not applicable

5.2 Unavoidable Adverse Impacts

Unavoidable adverse impacts would result from implementation of the Proposed Action. None of these impacts would be significant.

Geological Resources. Under the Proposed Action, construction activities, such as grading, excavating, and recontouring of the soil, would result in soil disturbance. Implementation of BMPs during construction would limit potential effects resulting from construction activities. Standard erosion control means would also reduce potential impacts related to these characteristics. Although unavoidable, impacts on soils at the Base are not considered significant.

Hazardous Materials and Wastes. The use of hazardous materials and generation of hazardous wastes is an unavoidable condition associated with the Proposed Action. However, the anticipated increase in the use of hazardous materials and generation of hazardous wastes would not be substantially higher than current usage and generation and, therefore, is not considered significant.

Energy. The use of nonrenewable resources is an unavoidable occurrence, although not considered significant. The Proposed Action would require the use of fossil fuels, a nonrenewable natural resource. Energy supplies, although relatively small, would be committed to the Proposed Action or No Action Alternative.

5.3 Compatibility of the Proposed Action and Alternatives with the Objectives of Federal, Regional, State, and Local Land Use Plans, Policies, and Controls

Impacts on the ground surface as a result of the Proposed Action would occur entirely within the boundaries of Buckley AFB. Construction of the modular offices and permanent facility would not result in any incompatible land uses on or off Base. The proposed location of the modular offices and permanent facility was selected according to existing land use zones. Consequently, construction of the modular offices and permanent facility would not conflict with Base land use policies or objectives. The Proposed Action would not conflict with any applicable off-Base land use ordinances or designated clear zones.

5.4 Relationship Between the Short-term Use of the Environment and Long-term Productivity

Short-term uses of the biophysical components of human environment include direct construction-related disturbances and direct impacts associated with an increase in population and activity that occurs over a

period of less than five years. Long-term uses of human environment include those impacts that occur over a period of more than five years, including permanent resource loss.

Several kinds of activities could result in short-term resource uses that compromise long-term productivity. Filling of wetlands or loss of other especially important habitats and consumptive use of high-quality water at nonrenewable rates are examples of actions that affect long-term productivity.

The Proposed Action would not result in a significant intensification of land use at Buckley AFB and in the surrounding area. The Proposed Action does not represent a significant loss of open space. Therefore, it is anticipated that the Proposed Action would not result in any cumulative land use or aesthetic impacts. Long-term productivity of this site would be increased by the development of the Proposed Action.

5.5 Irreversible and Irretrievable Commitments of Resources

The irreversible environmental changes that would result from implementation of the Proposed Action involve the consumption of material resources, energy resources, land, biological and human resources. The use of these resources is considered to be permanent.

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that use of these resources would have on future generations. Irreversible effects primarily result from use or destruction of a specific resource that cannot be replaced within a reasonable time frame (*e.g.*, energy and minerals).

Material Resources. Material resources utilized for the Proposed Action include building materials (for construction of facilities), concrete and asphalt (for roads), and various material supplies (for infrastructure). Most of the materials that would be consumed are not in short supply, would not limit other unrelated construction activities, and would not be considered significant.

Energy Resources. Energy resources utilized for the Proposed Action would be irretrievably lost. These include petroleum-based products (such as gasoline and diesel), natural gas, and electricity. During construction, gasoline and diesel would be used for the operation of construction vehicles. During operation, gasoline would be used for the operation of private and government-owned vehicles. Natural gas and electricity would be used by operational activities. Consumption of these energy resources would not place a significant demand on their availability in the region. Therefore, no significant impacts would be expected.

Biological Resources. The Proposed Action would result in minimal loss of vegetation and wildlife habitat on the proposed construction sites. The location of the proposed modular offices and permanent facility has been previously disturbed. Black-tailed prairie dog individuals and their habitat would be permanently lost.

Human Resources. The use of human resources for construction and operation is considered an irretrievable loss, only in that it would preclude such personnel from engaging in other work activities. However, the use of human resources for the Proposed Action represents employment opportunities, and is considered beneficial.

Floodplains. The Proposed Action would have no impact on the 100-year floodplain.

6. List of Preparers

This EA has been prepared under the direction of DOD and Buckley AFB. The individuals who contributed to the preparation of this document are listed below.

Suanne Collinsworth

engineering-environmental Management, Inc.
(e²M)
M.S. Environmental Sciences and Engineering
B.S. Geology
Certificate of Water Quality Management
Years of Experience: 6

Timothy Demorest

engineering-environmental Management, Inc.
(e²M)
A.M. Classical Studies
B.A. Classical Studies
Years of Experience: 2

Jeff Hokanson

engineering-environmental Management, Inc.
(e²M)
M.A. Anthropology
B.S. Anthropology
Years of Experience: 10

Brian Hoppy—Program Manager

engineering-environmental Management, Inc.
(e²M)
B.S. Biology
Certificate of Environmental Management
Years of Experience: 14

Ron Lamb

engineering-environmental Management, Inc.
(e²M)
M.S. Environmental Science
M.A. Political Science/International
Economics
B.S. Political Science
Years of Experience: 18

Sean McCain

engineering-environmental Management, Inc.
(e²M)
M.B.A. Business Administration
B.S. Forestry and Natural Resources
Management
Years of Experience: 9

Dan Niosi

engineering-environmental Management, Inc.
(e²M)
B.A. Environmental Studies, Natural
Resources
Years of Experience: 4

Rachel Schneider

engineering-environmental Management, Inc.
(e²M)
B.A. Chemistry with Environmental Studies
Years of Experience: 4

Lauri Watson

engineering-environmental Management, Inc.
(e²M)
B.S. Environmental Science
Years of Experience: 2

THIS PAGE LEFT INTENTIONALLY BLANK

7. References

- 460 ABW 2002 460th Air Base Wing (ABW). 2002. Management Action Plan for U.S. Air Force Space Command, Buckley Air Force Base (AFB), Colorado. Final Revision 3. November 2002.
- 460 CES/CEVP 2003a 460 CES/CEVP. 2003. Environmental Assessment for the Proposed Construction of an H-70 Fuel Storage Facility and a Medical Pharmacy. Buckley AFB, Colorado. May 2003.
- 460 CES/CEVP 2003b 460 CES/CEVP. 2003. Environmental Assessment for the Proposed Construction of an Entomology Facility and Demolition of the Existing Entomology Facility at Buckley AFB, Colorado. August 2003.
- AFI 32-7064 Air Force Instruction 32-7064. Integrated Natural Resources Management. July 22, 1994.
- Aurora 2003 City of Aurora Planning Department. 2003. 2003 Comprehensive Plan. Adopted October 27, 2003. Available: <http://www.auroragov.org/City%20Hall/Pages/2003%20Comprehensive%20Plan.cfm>. Accessed April 6, 2004.
- Aurora 2004 Aurora Economic Profile 2003-2004. Prepared by the Aurora Economic Development Council. Available at <http://www.auroradc.com>. Accessed March 23, 2004.
- APSD 2004 Aurora Public School District. 2004. District Profile and Demographics; 2003 Annual Report. Available: www.aps.k12.co.us Accessed May 7, 2004.
- BAFB 2002a Buckley AFB (BAFB). 2002. Final Draft Integrated Natural Resources Management Plan for Buckley AFB, Colorado. November 2002.
- BAFB 2002b BAFB. 2002. Economic Impact Analysis for Buckley AFB. Version 1.4. September 30, 2002.
- BAFB 2002c BAFB. 2002. Buckley AFB Vision 2020 Brochure. 460 CEC/CEC. September 2002
- BAFB 2002d BAFB. 2002. Environmental Assessment for Housing Privatization at Buckley Air Force Base, Colorado. August 2002.
- BAFB 2002e BAFB. 2002. Final 2002 Air Emission Inventory (AEI) Tables. April 9, 2003.
- BAFB 2003a BAFB. 2003. Supplemental Environmental Assessment for Buckley AFB Military Construction. Buckley AFB, Colorado. January 2003.
- BAFB 2003b BAFB. 2003. General Plan for Buckley Air Force Base, Colorado. Chapter 4.20: Land Use. Buckley AFB, Colorado.
- BAFB 2003c BAFB. 2003. Buckley AFB, Colorado Natural Resources Survey Map. Burrowing Owl Locations in 2003 and Nest Sites in 2002. Prepared by EDAW.
- BAFB 2003d BAFB. 2003. Draft Gate Design and Traffic Engineering Guidance for Buckley Air Force Base, Colorado. Prepared by Military Traffic Management Command, Transportation Engineering Agency. January 2003.
- BAFB 2003e BAFB. 2003. Environmental Assessment for Phase III Infrastructure Upgrade and Expansion at Buckley Air Force Base, Colorado. November 2003.
- BAFB 2003f BAFB. 2003. Asbestos Survey at Certain Construction Sites. Buckley Air Force Base, Colorado. February 12, 2003.

- BAFB 2003g BAFB. 2003. Buckley AFB, Colorado. Natural Resources Survey Map. Prairie Dog Survey 2003. Prepared by EDAW.
- Bailey 1995 Bailey, Robert G. 1995. Description of the Ecoregions of the United States. 2d ed. rev. and expanded (1st ed. 1980). Misc. Publ. No. 1391 (rev.), Washington, DC: USDA Forest service. 108 p. with separate map at 1:7,500,000.
- BANGB 1999 Buckley Air National Guard Base (ANGB). 1999. Integrated Natural Resources Management Plan for Buckley ANGB, Colorado. Prepared by Science and Engineering Associates, Inc. October 1999.
- CDPHE 2002a Colorado Department of Public Health and Environment (CDPHE). 2002. Colorado Air Quality Control Commission Report to the Public 2001-2002. <<http://www.cdphe.state.co.us/ap/down/01-02finalreport.pdf>>. Accessed March 16, 2004.
- CDPHE 2002b CDPHE. Operating Permit Buckley Air Force Base. July 1, 2002. <<http://www.cdphe.state.co.us/ap/downop/ar118p03.pdf>>. Accessed March 16, 2004.
- CDW 2003 Colorado Division of Wildlife (CDW). 2003. Colorado Listing of Endangered, Threatened and Wildlife Species of Special Concern. List last updated April, 2003. Page last updated February 24, 2004. Available: <http://wildlife.state.co.us/species_cons/list.asp>. Accessed April 5, 2004.
- CNHP 2000 Colorado Natural Heritage Progra, Colorado State University. 2000. Natural Heritage Inventory of Buckley Air National Guard Base, Arapahoe County, Colorado, July 2000.)
- Cowardin *et al.* 1979 Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service. Washington, DC.
- EIFS 2001 Economic Impact Forecast System (EIFS). 2001. Draft EIFS Version 6 User Manual prepared by Katherine Bragdon and Ron Webster. August 15, 2001.
- EIFS 2004 EIFS. 2004. The Economic Impact Forecast System Homepage. Army Environmental Policy Institute, Clark Atlanta University. <<http://eifs.cau.edu/fcreport.asp>>. Accessed March 2004
- Johnson 2004 Johnson, A. 2004. Personal communications between Ms. Anastasia M. Johnson (Buckley AFB) and Mr. Ronald Lamb (e²M), regarding LOS traffic data on the base.
- KFF 2004 Kaiser Family Foundation (KFF). 2004. State Health Facts Online. Colorado: Unemployment Rate (Seasonally Adjusted), 2003 Compared to 2002. <<http://www.statehealthfacts.kff.org>>. Accessed March 23, 2004.
- MES 2003 Soil Characterization Report Northwest Area – ADF Secure Compound and the Remote Terminal Facility, Buckley AFB, Colorado. Prepared by Matrix Environmental Services, LLC, Denver, Colorado, October 7, 2003.
- NatureServe 2003 NatureServe. 2003. NatureServe Explorer: An online encyclopedia of life [web application]. Version 1.8. NatureServe, Arlington, Virginia. Available <<http://www.natureserve.org/explorer>>. Accessed April 5, 2004.
- NOAA 1994 National Oceanic and Atmospheric Administration (NOAA). 1994. The Interorganizational Committee on Guidelines and Principles for Social Impact Assessment. "Guidelines and Principles for Social Impact Assessment," U.S. Department of Commerce, Technical Memorandum NMFS-F/SPO-16.

Sherva 2004a Sherva, Elise. 2004. E-mail communication from Ms. Elise Sherva (460 CES/CEVP) to Mr. Dan Niosi (e²M) providing most current numbers of employees at Buckley AFB. March 15, 2004.

Sherva 2004b Sherva, Elise. 2004. E-mail communication from Ms. Elise Sherva (460 CES/CEVP) to Mr. Ron Lamb (e²M) providing information on construction and demolition projects at Buckley AFB. January 30, 2004.

SMAQMD 1994 Sacramento Metropolitan Air Quality Management District. (SMAQMD). 1994. Thresholds of Significance. December 1994.

U.S. Bureau of Census 2000 U.S. Bureau of Census. 2000. American Fact Finder. Available online <<http://www.factfinder.census.gov>>. Accessed March 24, 2004.

USAF 1999 USAF. 1999. Air Installation Compatible Use Zone (AICUZ) Handbook, Air Force Handbook 32-7084, Base Comprehensive Planning, Headquarters, US Air Force Directorate of Logistics and Engineering, Bolling Air Force Base, Washington, D.C., and Headquarters, US Air Force Center for Environmental Excellence, Brooks Air Force Base, Texas. March 1999.

USAF 2003 United States Air Force (USAF). 2003. Environmental Assessment for Buckley Air Force Base Air Traffic Control Tower and Fire Station. May 2003.

USDOT 1980 U.S. Department of Transportation (USDOT). 1980. Guidelines for Considering Noise in Land Use Planning and Control, Federal Interagency Committee on Urban Noise. June 1980.

USEPA 1974 U.S. Environmental Protection Agency (USEPA). 1974. Information of Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, Publication No. 550/9-74-004, Washington, D.C. March 1974.

USEPA 2004 U.S. Environmental Protection Agency (USEPA). 2004. AirData NET Tier Report <<http://www.epa.gov/air/data/nettier.html>>. Accessed February 10, 2004.

USFWS 2002 United States Fish and Wildlife Service (USFWS). 2002. Written correspondence from LeRoy W. Carlson (Colorado Field Supervisor, USFWS) to Lt. Col. Scharff (Buckley AFB) about Preble's meadow jumping mouse. January 15, 2002.

USFWS 2003 U.S. Fish and Wildlife Service (USFWS). 2003. Federally Listed and Proposed (P), Endangered (E), Threatened (T), Experimental (X), and Candidate (C) Species and Habitat in Colorado by County. Last updated October 2003. Available: <<http://mountain-prairie.fws.gov/endspp/CountyLists/COLORADO082003.htm>>. Accessed April 5, 2004.

WRCC 2004 Western Regional Climate Center (WRCC). Western U.S. Historical Summaries. <www.wrcc.dri.edu> Accessed May 24, 2004.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX A

APPLICABLE LAWS, REGULATIONS, POLICIES, AND PLANNING CRITERIA

APPENDIX A

APPLICABLE LAWS, REGULATIONS, POLICIES, AND PLANNING CRITERIA

When considering the affected environment, physical, biological, economic, and social factors must be considered. In addition to the National Environmental Policy Act (NEPA), the following environmental laws and Executive Orders (EOs) are applicable to the Proposed Action and will be considered as part of the EA. These laws and EOs are briefly summarized below.

Air Quality

The Clean Air Act (CAA) of 1970, and Amendments of 1977 and 1990, recognizes that increases in air pollution result in danger to public health and welfare. To protect and enhance the quality of national air resources, the CAA authorizes the U.S. Environmental Protection Agency (USEPA) to set six National Ambient Air Quality Standards (NAAQS) which regulate carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide, and particulate matter pollution emissions. The CAA seeks to reduce or eliminate the creation of pollutants at their source, and designates this responsibility to state and local governments. States are directed to use financial and technical assistance as well as leadership from the Federal government to develop implementation plans to achieve NAAQS. Geographic areas are officially designated by USEPA as being in attainment or nonattainment to pollutants in relation to their compliance with NAAQS. Geographic regions established for air quality planning purposes are designated as Air Quality Control Regions (AQCR). Pollutant concentration levels are measured at designated monitoring stations within the AQCR. An area with insufficient monitoring data is designated as unclassifiable. Section 309 of the CAA authorizes USEPA to review and comment on impact statements prepared by other agencies.

An agency should consider what effect an action may have on NAAQS due to short-term increases in air pollution during construction as well as long-term increases resulting from changes in traffic patterns. For actions in attainment areas, a Federal agency may also be subject to USEPA's Prevention of Significant Deterioration regulations. These regulations apply to new major stationary sources and modifications to such sources. Although few agency facilities will actually emit pollutants, increases in pollution can result from a change in traffic patterns or volume. Section 118 of the CAA waives Federal immunity from complying with the CAA and states that all Federal agencies will comply with all Federal- and state-approved requirements.

Water Resources

The Clean Water Act (CWA) of 1977 is an amendment to the Federal Water Pollution Control Act of 1972, is administered by USEPA, and sets the basic structure for regulating discharges of pollutants into U.S. waters. The CWA requires USEPA to establish water quality standards for specified contaminants in surface waters and forbids the discharge of pollutants from a point source into navigable waters without a National Pollutant Discharge Elimination System (NPDES) permit. The USEPA has retained authority for storm water permitting at Federal facilities in Colorado. Section 404 of the CWA establishes a Federal program to regulate the discharge of dredge and fill material into waters of the U.S. Section 404 permits are issued by the U.S. Army Corps of Engineers. Waters of the U.S. include interstate and intrastate lakes, rivers, streams, and wetlands, which are used for commerce, recreation, industry, sources of fish, and other purposes. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Each agency should consider the impact on water quality from actions such as the discharge of dredge or fill material into U.S. waters from construction, or the discharge of pollutants as a result of facility occupation.

EO 11988, "Floodplain Management," May 24, 1977, directs agencies to consider alternatives to avoid adverse effects and incompatible development in floodplains. An agency may locate a facility in a floodplain if the head of the agency finds there is no practicable alternative. If it is found there is no practicable alternative, the agency must minimize potential harm to the floodplain, and circulate a notice explaining why the action is to be located in the floodplain prior to taking action. Finally, new construction in a floodplain must apply accepted floodproofing and flood protection to include elevating structures above the base flood level rather than filling in land.

Biological Resources

The Endangered Species Act (ESA) of 1973 establishes a Federal program to conserve, protect, and restore threatened and endangered plants and animals and their habitats. The ESA specifically charges Federal agencies with the responsibility of using their authority to conserve threatened and endangered species. All Federal agencies must ensure any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction of critical habitat for these species, unless the agency has been granted an exemption. The Secretary of the Interior, using the best available scientific data, determines which species are officially endangered or threatened, and the U.S. Fish and Wildlife Service (USFWS) maintains the list. A list of Federal endangered species may be obtained from the Endangered Species Division, USFWS (703-

358-2171). States may also have their own lists of threatened and endangered species which may be obtained by calling the appropriate state fish and wildlife office. Some species, such as the bald eagle, also have laws specifically for their protection (e.g., Bald Eagle Protection Act).

The Migratory Bird Treaty Act (MBTA) of 1918, amended in 1936, 1960, 1968, 1969, 1974, 1978, 1986, and 1989, implements treaties and conventions between the U.S., Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Unless otherwise permitted by regulations, the MBTA makes it unlawful to pursue, hunt, take, capture, or kill; attempt to take, capture or kill; possess; offer to or sell; barter; purchase; deliver; or cause to be shipped, exported, imported, transported, carried, or received any migratory bird, part, nest, egg, or product, manufactured or not. The MBTA also makes it unlawful to ship, transport or carry from one state, territory or district to another, or through a foreign country, any bird, part, nest, or egg that was captured, killed, taken, shipped, transported, or carried contrary to the laws from where it was obtained; and import from Canada any bird, part, nest, or egg obtained contrary to the laws of the province from which it was obtained. The U.S. Department of the Interior has authority to arrest, with or without a warrant, a person violating the MBTA.

EO 11990, Protection of Wetlands, May 24, 1977, directs agencies to consider alternatives to avoid adverse effects and incompatible development in wetlands. Federal agencies are to avoid new construction in wetlands, unless the agency finds there is no practicable alternative to construction in the wetland, and the proposed construction incorporates all possible measures to limit harm to the wetland. Agencies should use economic and environmental data, agency mission statements, and any other pertinent information when deciding whether or not to build in wetlands. EO 11990 directs each agency to provide for early public review of plans for construction in wetlands.

EO 13186, Conservation of Migratory Birds, January 10, 2001, creates a more comprehensive strategy for the conservation of migratory birds by the Federal government. The EO provides a specific framework for the Federal government's compliance with its treaty obligations to Canada, Mexico, Russia, and Japan. The EO provides broad guidelines on conservation responsibilities and requires the development of more detailed guidance in a Memorandum of Understanding (MOU). The EO will be coordinated and implemented by the USFWS. The MOU will outline how Federal agencies will promote conservation of migratory birds. The EO requires the support of various conservation planning efforts already in progress; incorporation of bird conservation considerations into agency planning, including NEPA analyses; and reporting annually on the level of take of migratory birds.

Cultural Resources

The National Historic Preservation Act (NHPA) of 1966 sets forth national policy to identify and preserve properties of state, local, and national significance. The NHPA establishes the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Officers (SHPOs), and the National Register of Historic Places (NRHP). ACHP advises the President, Congress, and Federal agencies on historic preservation issues. Section 106 of the Act directs Federal agencies to take into account effects of their undertakings (actions and authorizations) on properties included in or eligible for the NRHP. Section 110 sets inventory, nomination, protection, and preservation responsibilities for federally owned cultural properties. Section 106 of the act is implemented by regulations of the ACHP, 36 CFR Part 800. Agencies should coordinate studies and documents prepared under Section 106 with NEPA where appropriate. However, NEPA and NHPA are separate statutes and compliance with one does not constitute compliance with the other. For example, actions which qualify for a categorical exclusion under NEPA may still require Section 106 review under NHPA. It is the responsibility of the agency official to identify properties in the area of potential effects, and whether they are included or eligible for inclusion in the NRHP. Section 110 of the NHPA requires Federal agencies to identify, evaluate, and nominate historic property under agency control to the NRHP.

The Archaeological Resource Protection Act (ARPA) of 1979 protects archaeological resources on public and Indian lands. It provides felony-level penalties for the unauthorized excavation, removal, damage, alteration, or defacement of any archaeological resource, defined as material remains of past human life or activities which are at least 100 years old. Before archaeological resources are excavated or removed from public lands, the Federal land manager must issue a permit detailing the time, scope, location, and specific purpose of the proposed work. ARPA also fosters the exchange of information about archaeological resources between governmental agencies, the professional archaeological community, and private individuals. ARPA is implemented by regulations found in 43 CFR Part 7.

The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 establishes rights of Indian tribes to claim ownership of certain “cultural items,” defined as Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony, held or controlled by Federal agencies. Cultural items discovered on Federal or tribal lands are, in order of primacy, the property of lineal descendants, if these can be determined; property of the tribe owning the land where the items were discovered; and then property of the tribe with the closest cultural affiliation with the items. Discoveries of cultural items on Federal or tribal land must be reported to the appropriate

Indian tribe and the Federal agency with jurisdiction over the land. If the discovery is made as a result of a land use, activity in the area must stop and the items must be protected pending the outcome of consultation with the affiliated tribe.

EO 11593, Protection and Enhancement of the Cultural Environment, May 13, 1971, directs the Federal Government to provide leadership in the preservation, restoration, and maintenance of the historic and cultural environment. Federal agencies are required to locate and evaluate all Federal sites under their jurisdiction or control which may qualify for listing on the NRHP. Agencies must allow the ACHP to comment on the alteration, demolition, sale, or transfer of property which is likely to meet the criteria for listing as determined by the Secretary of the Interior in consultation with the SHPO. Agencies must also initiate procedures to maintain federally owned sites listed on the NRHP.

EO 13007, Indian Sacred Sites, May 24, 1996, provides that agencies managing Federal lands, to the extent practicable, permitted by law, and not inconsistent with agency functions, shall accommodate Indian religious practitioners' access to and ceremonial use of Indian sacred sites, shall avoid adversely affecting the physical integrity of such sites, and shall maintain the confidentiality of such sites. Federal agencies are responsible for informing tribes of proposed actions that could restrict future access to or ceremonial use of, or adversely affect the physical integrity of, sacred sites.

EO 13287, Preserve America, March 3, 2003, orders the Federal Government to take a leadership role in protection, enhancement, and contemporary use of historic properties owned by the Federal Government, and promote intergovernmental cooperation and partnerships for preservation and use of historic properties. The EO established new accountability for agencies with respect to inventories and stewardship.

Socioeconomics and Environmental Justice

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, February 11, 1994, directs Federal agencies to make achieving environmental justice part of their mission. Agencies must identify and address adverse human health and/or environmental effects its activities have on minority and low-income populations, and develop agencywide environmental justice strategies. The strategy must list "programs, policies, planning and public participation processes, enforcement, and/or rulemakings related to human health or the environment that should be revised to promote enforcement of all health and environmental statutes in areas with minority populations and low-income populations, ensure greater public participation, improve research and data collection relating to the health of and environment of minority populations

and low-income populations, and identify differential patterns of consumption of natural resources among minority populations and low-income populations.” A copy of the strategy and progress reports must be provided to the Federal Working Group on Environmental Justice. Responsibility for compliance with this EO lies with each Federal agency.

Hazardous Materials and Waste

The Resource Conservation and Recovery Act (RCRA) of 1976 is an amendment to the Solid Waste Disposal Act. RCRA authorizes USEPA to provide for “cradle-to-grave” management of hazardous waste and sets a framework for the management of nonhazardous municipal solid waste. Under RCRA, hazardous waste is controlled from generation to disposal through tracking and permitting systems, and restrictions and controls on the placement of waste on or into the land. Under RCRA, a waste is defined as hazardous if it is ignitable, corrosive, reactive, toxic, or listed by USEPA as being hazardous. With *The Hazardous and Solid Waste Amendments (HSWA) of 1984*, Congress targeted stricter standards for waste disposal and encouraged pollution prevention by prohibiting the land disposal of particular wastes. The HSWA amendments strengthen control of both hazardous and nonhazardous waste and emphasize the prevention of pollution of groundwater.

The Toxic Substance Control Act (TSCA) of 1976 consists of four titles. Title I established requirements and authorities to identify and control toxic chemical hazards to human health and the environment. TSCA authorized USEPA to gather information on chemical risks, require companies to test chemicals for toxic effects, and regulate chemicals with unreasonable risk. TSCA also singled out polychlorinated biphenyls (PCBs) for regulation, and as a result PCBs are being phased out. TSCA and its regulations govern the manufacture, processing, distribution, use, marking, storage, disposal, and cleanup; and release reporting requirements for numerous chemicals like PCBs. PCBs are persistent when released into the environment and accumulate in the tissues of living organisms. They have been shown to cause adverse health effects on laboratory animals and might cause adverse health effects in humans. TSCA Title II provides statutory framework for “Asbestos Hazard Emergency Response,” which applies only to schools. TSCA Title III, “Indoor Radon Abatement,” states indoor air in U.S. buildings should be as free of radon as the outside ambient air. Federal agencies are required to conduct studies on the extent of radon contamination in buildings they own. TSCA Title IV, “Lead Exposure Reduction,” directs Federal agencies to “conduct a comprehensive program to promote safe, effective, and affordable monitoring, detection, and abatement of lead-based paint and other lead exposure hazards.” Further, any Federal agency with jurisdiction over a property or facility must comply with all Federal, state, interstate, and local requirements concerning lead-based paint.

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 authorizes USEPA to respond to spills and other releases of hazardous substances to the environment, and authorizes the National Oil and Hazardous Substances Pollution Contingency Plan. CERCLA also provides a Federal “Superfund” to respond to emergencies immediately. Although the “Superfund” provides funds for cleanup of sites where potentially responsible parties cannot be identified, USEPA is authorized to recover funds through damages collected from responsible parties. This funding process places the economic burden for cleanup on polluters.

The Pollution Prevention Act (PPA) of 1990 encourages manufacturers to avoid the generation of pollution by modifying equipment and processes, redesigning products, substituting raw materials, and making improvements in management techniques, training, and inventory control. EO 12856 requires Federal agencies to comply with the provisions of the PPA and ensure all necessary actions are taken to prevent pollution. In addition, in Federal Register Volume 58 Number 18 (January 29, 1993), CEQ provides guidance to Federal agencies on how to “incorporate pollution prevention principles, techniques, and mechanisms into their planning and decision making processes and to evaluate and report those efforts, as appropriate, in documents pursuant to NEPA.”

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX B

LIST OF INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTAL PLANNING CORRESPONDENCE



March 18, 2004

Ms. Cynthia Cody
NEPA Unit Chief
U.S. Environmental Protection Agency, Region 8
999 18th Street, Suite 500
Denver, CO 80202

Dear Ms. Cody:

On behalf of the Department of Defense and the 460th Air Base Wing, engineering-environmental Management, Inc. (e²M) is preparing an Environmental Assessment on the proposed establishment of a "Center of Excellence" at Buckley Air Force Base, Colorado. The "Center of Excellence" would centralize the Department's technical and scientific mission and involve three components: (1) the staffing of approximately 350 military and civilian personnel at the facility, (2) construction of approximately 40,000 square feet of temporary, modular offices, and (3) construction of a permanent facility of approximately 180,000 square feet. The modular offices would be removed when the permanent facility is completed. The Description of Proposed Action and Alternatives (DOPAA) is included with this correspondence as Attachment 1.

The environmental impact analysis process for this proposal is being conducted by the Department of Defense in accordance with the Council on Environmental Quality guidelines pursuant to the requirements of the National Environmental Policy Act of 1969. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation by reviewing the attached DOPAA and solicit your comments concerning the proposal and any potential environmental consequences. Please provide written comments or information regarding the action at your earliest convenience but no later than April 14, 2004. Also enclosed is a listing of the Federal, state, and local agencies that have been contacted (see Attachment 2). If there are any additional agencies that you feel should review and comment on the proposal, please include them in your distribution of this letter and the attached materials.

Please forward your written comments on the proposal to: Mr. Ron Lamb, Project Manager, e²M, Inc., 3949 Pender Drive, Suite 120, Fairfax, VA 22030. Written comments can also be sent via fax to: 703-273-1711.

Sincerely,

engineering-environmental Management, Inc.

Ronald E. Lamb
Project Manager

Attachments:

1. Description of Proposed Action and Alternatives
2. Distribution List

3949 Pender Drive, Suite 120, , Fairfax, VA 22030 • (703) 273-7171 • Fax (703) 273-1711

SACRAMENTO, CA

JACKSONVILLE, FL

SAN DIEGO, CA

SAN ANTONIO, TX

DENVER, CO

PHILADELPHIA, PA

TULSA, OK



March 18, 2004

Ms. Jennifer Lane
U.S. Environmental Protection Agency, Region 8
999 18th Street, Suite 500
Denver, CO 80202

Dear Ms. Lane:

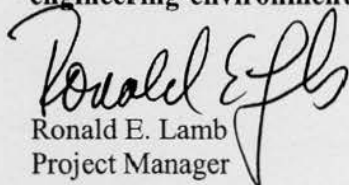
On behalf of the Department of Defense and the 460th Air Base Wing, engineering-environmental Management, Inc. (e²M) is preparing an Environmental Assessment on the proposed establishment of a "Center of Excellence" at Buckley Air Force Base, Colorado. The "Center of Excellence" would centralize the Department's technical and scientific mission and involve three components: (1) the staffing of approximately 350 military and civilian personnel at the facility, (2) construction of approximately 40,000 square feet of temporary, modular offices, and (3) construction of a permanent facility of approximately 180,000 square feet. The modular offices would be removed when the permanent facility is completed. The Description of Proposed Action and Alternatives (DOPAA) is included with this correspondence as Attachment 1.

The environmental impact analysis process for this proposal is being conducted by the Department of Defense in accordance with the Council on Environmental Quality guidelines pursuant to the requirements of the National Environmental Policy Act of 1969. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation by reviewing the attached DOPAA and solicit your comments concerning the proposal and any potential environmental consequences. Please provide written comments or information regarding the action at your earliest convenience but no later than April 14, 2004. Also enclosed is a listing of the Federal, state, and local agencies that have been contacted (see Attachment 2). If there are any additional agencies that you feel should review and comment on the proposal, please include them in your distribution of this letter and the attached materials.

Please forward your written comments on the proposal to: Mr. Ron Lamb, Project Manager, e²M, Inc., 3949 Pender Drive, Suite 120, Fairfax, VA 22030. Written comments can also be sent via fax to: 703-273-1711.

Sincerely,

engineering-environmental Management, Inc.



Ronald E. Lamb
Project Manager

Attachments:

1. Description of Proposed Action and Alternatives
2. Distribution List



March 18, 2004

Mr. David Rathke
U.S. Environmental Protection Agency, Region 8
999 18th Street, Suite 500
Denver, CO 80202

Dear Mr. Rathke:

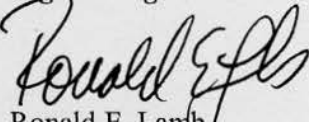
On behalf of the Department of Defense and the 460th Air Base Wing, engineering-environmental Management, Inc. (e²M) is preparing an Environmental Assessment on the proposed establishment of a "Center of Excellence" at Buckley Air Force Base, Colorado. The "Center of Excellence" would centralize the Department's technical and scientific mission and involve three components: (1) the staffing of approximately 350 military and civilian personnel at the facility, (2) construction of approximately 40,000 square feet of temporary, modular offices, and (3) construction of a permanent facility of approximately 180,000 square feet. The modular offices would be removed when the permanent facility is completed. The Description of Proposed Action and Alternatives (DOPAA) is included with this correspondence as Attachment 1.

The environmental impact analysis process for this proposal is being conducted by the Department of Defense in accordance with the Council on Environmental Quality guidelines pursuant to the requirements of the National Environmental Policy Act of 1969. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation by reviewing the attached DOPAA and solicit your comments concerning the proposal and any potential environmental consequences. Please provide written comments or information regarding the action at your earliest convenience but no later than April 14, 2004. Also enclosed is a listing of the Federal, state, and local agencies that have been contacted (see Attachment 2). If there are any additional agencies that you feel should review and comment on the proposal, please include them in your distribution of this letter and the attached materials.

Please forward your written comments on the proposal to: Mr. Ron Lamb, Project Manager, e²M, Inc., 3949 Pender Drive, Suite 120, Fairfax, VA 22030. Written comments can also be sent via fax to: 703-273-1711.

Sincerely,

engineering-environmental Management, Inc.



Ronald E. Lamb
Project Manager

Attachments:

1. Description of Proposed Action and Alternatives
2. Distribution List

3949 Pender Drive, Suite 120, , Fairfax, VA 22030 • (703) 273-7171 • Fax (703) 273-1711

SACRAMENTO, CA JACKSONVILLE, FL SAN DIEGO, CA SAN ANTONIO, TX DENVER, CO PHILADELPHIA, PA TULSA, OK



March 18, 2004

Ms. Jill Barker
Chief, Ecological Services Operation Division
U.S. Fish and Wildlife Service Region 6
P.O. Box 25486
Denver Federal Center
Denver, CO 80225

Dear Ms. Barker:

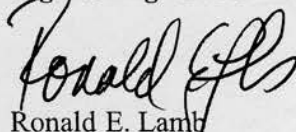
On behalf of the Department of Defense and the 460th Air Base Wing, engineering-environmental Management, Inc. (e²M) is preparing an Environmental Assessment on the proposed establishment of a "Center of Excellence" at Buckley Air Force Base, Colorado. The "Center of Excellence" would centralize the Department's technical and scientific mission and involve three components: (1) the staffing of approximately 350 military and civilian personnel at the facility, (2) construction of approximately 40,000 square feet of temporary, modular offices, and (3) construction of a permanent facility of approximately 180,000 square feet. The modular offices would be removed when the permanent facility is completed. The Description of Proposed Action and Alternatives (DOPAA) is included with this correspondence as Attachment 1.

The environmental impact analysis process for this proposal is being conducted by the Department of Defense in accordance with the Council on Environmental Quality guidelines pursuant to the requirements of the National Environmental Policy Act of 1969. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation by reviewing the attached DOPAA and solicit your comments concerning the proposal and any potential environmental consequences. Please provide written comments or information regarding the action at your earliest convenience but no later than April 14, 2004. Also enclosed is a listing of the Federal, state, and local agencies that have been contacted (see Attachment 2). If there are any additional agencies that you feel should review and comment on the proposal, please include them in your distribution of this letter and the attached materials.

Please forward your written comments on the proposal to: Mr. Ron Lamb, Project Manager, e²M, Inc., 3949 Pender Drive, Suite 120, Fairfax, VA 22030. Written comments can also be sent via fax to: 703-273-1711.

Sincerely,

engineering-environmental Management, Inc.



Ronald E. Lamb
Project Manager

Attachments:

1. Description of Proposed Action and Alternatives
2. Distribution List

3949 Pender Drive, Suite 120, , Fairfax, VA 22030 • (703) 273-7171 • Fax (703) 273-1711

SACRAMENTO, CA JACKSONVILLE, FL SAN DIEGO, CA SAN ANTONIO, TX DENVER, CO PHILADELPHIA, PA TULSA, OK



March 18, 2004

Mr. Bruce Rosenlund
Colorado Field Supervisor
U.S. Fish and Wildlife Service
755 Parfet Street, Suite 496
Lakewood, CO 80215

Dear Mr. Rosenlund:

On behalf of the Department of Defense and the 460th Air Base Wing, engineering-environmental Management, Inc. (e²M) is preparing an Environmental Assessment on the proposed establishment of a "Center of Excellence" at Buckley Air Force Base, Colorado. The "Center of Excellence" would centralize the Department's technical and scientific mission and involve three components: (1) the staffing of approximately 350 military and civilian personnel at the facility, (2) construction of approximately 40,000 square feet of temporary, modular offices, and (3) construction of a permanent facility of approximately 180,000 square feet. The modular offices would be removed when the permanent facility is completed. The Description of Proposed Action and Alternatives (DOPAA) is included with this correspondence as Attachment 1.

The environmental impact analysis process for this proposal is being conducted by the Department of Defense in accordance with the Council on Environmental Quality guidelines pursuant to the requirements of the National Environmental Policy Act of 1969. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation by reviewing the attached DOPAA and solicit your comments concerning the proposal and any potential environmental consequences. Please provide written comments or information regarding the action at your earliest convenience but no later than April 14, 2004. Also enclosed is a listing of the Federal, state, and local agencies that have been contacted (see Attachment 2). If there are any additional agencies that you feel should review and comment on the proposal, please include them in your distribution of this letter and the attached materials.

Please forward your written comments on the proposal to: Mr. Ron Lamb, Project Manager, e²M, Inc., 3949 Pender Drive, Suite 120, Fairfax, VA 22030. Written comments can also be sent via fax to: 703-273-1711.

Sincerely,

engineering-environmental Management, Inc.

Ronald E. Lamb
Project Manager

Attachments:

1. Description of Proposed Action and Alternatives
2. Distribution List

3949 Pender Drive, Suite 120, , Fairfax, VA 22030 • (703) 273-7171 • Fax (703) 273-1711

SACRAMENTO, CA JACKSONVILLE, FL SAN DIEGO, CA SAN ANTONIO, TX DENVER, CO PHILADELPHIA, PA TULSA, OK



March 18, 2004

Mr. Ed LaRock
Federal Facilities HMWM 2800
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive, South
Denver, CO 80246-1530

Dear Mr. LaRock:

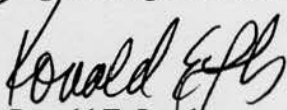
On behalf of the Department of Defense and the 460th Air Base Wing, engineering-environmental Management, Inc. (e²M) is preparing an Environmental Assessment on the proposed establishment of a "Center of Excellence" at Buckley Air Force Base, Colorado. The "Center of Excellence" would centralize the Department's technical and scientific mission and involve three components: (1) the staffing of approximately 350 military and civilian personnel at the facility, (2) construction of approximately 40,000 square feet of temporary, modular offices, and (3) construction of a permanent facility of approximately 180,000 square feet. The modular offices would be removed when the permanent facility is completed. The Description of Proposed Action and Alternatives (DOPAA) is included with this correspondence as Attachment 1.

The environmental impact analysis process for this proposal is being conducted by the Department of Defense in accordance with the Council on Environmental Quality guidelines pursuant to the requirements of the National Environmental Policy Act of 1969. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation by reviewing the attached DOPAA and solicit your comments concerning the proposal and any potential environmental consequences. Please provide written comments or information regarding the action at your earliest convenience but no later than April 14, 2004. Also enclosed is a listing of the Federal, state, and local agencies that have been contacted (see Attachment 2). If there are any additional agencies that you feel should review and comment on the proposal, please include them in your distribution of this letter and the attached materials.

Please forward your written comments on the proposal to: Mr. Ron Lamb, Project Manager, e²M, Inc., 3949 Pender Drive, Suite 120, Fairfax, VA 22030. Written comments can also be sent via fax to: 703-273-1711.

Sincerely,

engineering-environmental Management, Inc.


Ronald E. Lamb
Project Manager

Attachments:

1. Description of Proposed Action and Alternatives
2. Distribution List

3949 Pender Drive, Suite 120, , Fairfax, VA 22030 • (703) 273-7171 • Fax (703) 273-1711

SACRAMENTO, CA JACKSONVILLE, FL SAN DIEGO, CA SAN ANTONIO, TX DENVER, CO PHILADELPHIA, PA TULSA, OK



March 18, 2004

Ms. Eliza Moore
Wildlife Manager
Colorado Division of Wildlife
6060 South Broadway
Denver, CO 80216

Dear Ms. Moore:

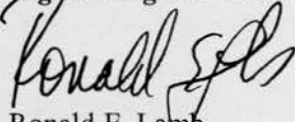
On behalf of the Department of Defense and the 460th Air Base Wing, engineering-environmental Management, Inc. (e²M) is preparing an Environmental Assessment on the proposed establishment of a "Center of Excellence" at Buckley Air Force Base, Colorado. The "Center of Excellence" would centralize the Department's technical and scientific mission and involve three components: (1) the staffing of approximately 350 military and civilian personnel at the facility, (2) construction of approximately 40,000 square feet of temporary, modular offices, and (3) construction of a permanent facility of approximately 180,000 square feet. The modular offices would be removed when the permanent facility is completed. The Description of Proposed Action and Alternatives (DOPAA) is included with this correspondence as Attachment 1.

The environmental impact analysis process for this proposal is being conducted by the Department of Defense in accordance with the Council on Environmental Quality guidelines pursuant to the requirements of the National Environmental Policy Act of 1969. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation by reviewing the attached DOPAA and solicit your comments concerning the proposal and any potential environmental consequences. Please provide written comments or information regarding the action at your earliest convenience but no later than April 14, 2004. Also enclosed is a listing of the Federal, state, and local agencies that have been contacted (see Attachment 2). If there are any additional agencies that you feel should review and comment on the proposal, please include them in your distribution of this letter and the attached materials.

Please forward your written comments on the proposal to: Mr. Ron Lamb, Project Manager, e²M, Inc., 3949 Pender Drive, Suite 120, Fairfax, VA 22030. Written comments can also be sent via fax to: 703-273-1711.

Sincerely,

engineering-environmental Management, Inc.



Ronald E. Lamb
Project Manager

Attachments:

1. Description of Proposed Action and Alternatives
2. Distribution List

3949 Pender Drive, Suite 120, , Fairfax, VA 22030 • (703) 273-7171 • Fax (703) 273-1711

SACRAMENTO, CA JACKSONVILLE, FL SAN DIEGO, CA SAN ANTONIO, TX DENVER, CO PHILADELPHIA, PA TULSA, OK



March 18, 2004

Mr. Brad Beckman
Manager Environmental Planning
Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, CO 80222

Dear Mr. Beckman:

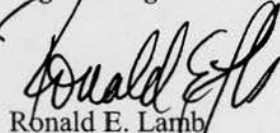
On behalf of the Department of Defense and the 460th Air Base Wing, engineering-environmental Management, Inc. (e²M) is preparing an Environmental Assessment on the proposed establishment of a "Center of Excellence" at Buckley Air Force Base, Colorado. The "Center of Excellence" would centralize the Department's technical and scientific mission and involve three components: (1) the staffing of approximately 350 military and civilian personnel at the facility, (2) construction of approximately 40,000 square feet of temporary, modular offices, and (3) construction of a permanent facility of approximately 180,000 square feet. The modular offices would be removed when the permanent facility is completed. The Description of Proposed Action and Alternatives (DOPAA) is included with this correspondence as Attachment 1.

The environmental impact analysis process for this proposal is being conducted by the Department of Defense in accordance with the Council on Environmental Quality guidelines pursuant to the requirements of the National Environmental Policy Act of 1969. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation by reviewing the attached DOPAA and solicit your comments concerning the proposal and any potential environmental consequences. Please provide written comments or information regarding the action at your earliest convenience but no later than April 14, 2004. Also enclosed is a listing of the Federal, state, and local agencies that have been contacted (see Attachment 2). If there are any additional agencies that you feel should review and comment on the proposal, please include them in your distribution of this letter and the attached materials.

Please forward your written comments on the proposal to: Mr. Ron Lamb, Project Manager, e²M, Inc., 3949 Pender Drive, Suite 120, Fairfax, VA 22030. Written comments can also be sent via fax to: 703-273-1711.

Sincerely,

engineering-environmental Management, Inc.



Ronald E. Lamb
Project Manager

Attachments:

1. Description of Proposed Action and Alternatives
2. Distribution List



March 18, 2004

Ms. Denise Balkas
Director of Planning
City of Aurora
1470 South Havana
Aurora, CO 80012

Dear Ms. Balkas:

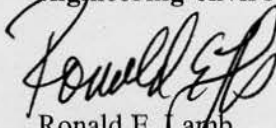
On behalf of the Department of Defense and the 460th Air Base Wing, engineering-environmental Management, Inc. (e²M) is preparing an Environmental Assessment on the proposed establishment of a "Center of Excellence" at Buckley Air Force Base, Colorado. The "Center of Excellence" would centralize the Department's technical and scientific mission and involve three components: (1) the staffing of approximately 350 military and civilian personnel at the facility, (2) construction of approximately 40,000 square feet of temporary, modular offices, and (3) construction of a permanent facility of approximately 180,000 square feet. The modular offices would be removed when the permanent facility is completed. The Description of Proposed Action and Alternatives (DOPAA) is included with this correspondence as Attachment 1.

The environmental impact analysis process for this proposal is being conducted by the Department of Defense in accordance with the Council on Environmental Quality guidelines pursuant to the requirements of the National Environmental Policy Act of 1969. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation by reviewing the attached DOPAA and solicit your comments concerning the proposal and any potential environmental consequences. Please provide written comments or information regarding the action at your earliest convenience but no later than April 14, 2004. Also enclosed is a listing of the Federal, state, and local agencies that have been contacted (see Attachment 2). If there are any additional agencies that you feel should review and comment on the proposal, please include them in your distribution of this letter and the attached materials.

Please forward your written comments on the proposal to: Mr. Ron Lamb, Project Manager, e²M, Inc., 3949 Pender Drive, Suite 120, Fairfax, VA 22030. Written comments can also be sent via fax to: 703-273-1711.

Sincerely,

engineering-environmental Management, Inc.



Ronald E. Lamb
Project Manager

Attachments:

1. Description of Proposed Action and Alternatives
2. Distribution List

3949 Pender Drive, Suite 120, , Fairfax, VA 22030 • (703) 273-7171 • Fax (703) 273-1711

SACRAMENTO, CA JACKSONVILLE, FL SAN DIEGO, CA SAN ANTONIO, TX DENVER, CO PHILADELPHIA, PA TULSA, OK



March 18, 2004

Mr. James Ives
Planning, Environmental Division
City of Aurora
1470 South Havana
Aurora, CO 80012

Dear Mr. Ives:

On behalf of the Department of Defense and the 460th Air Base Wing, engineering-environmental Management, Inc. (e²M) is preparing an Environmental Assessment on the proposed establishment of a "Center of Excellence" at Buckley Air Force Base, Colorado. The "Center of Excellence" would centralize the Department's technical and scientific mission and involve three components: (1) the staffing of approximately 350 military and civilian personnel at the facility, (2) construction of approximately 40,000 square feet of temporary, modular offices, and (3) construction of a permanent facility of approximately 180,000 square feet. The modular offices would be removed when the permanent facility is completed. The Description of Proposed Action and Alternatives (DOPAA) is included with this correspondence as Attachment 1.

The environmental impact analysis process for this proposal is being conducted by the Department of Defense in accordance with the Council on Environmental Quality guidelines pursuant to the requirements of the National Environmental Policy Act of 1969. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation by reviewing the attached DOPAA and solicit your comments concerning the proposal and any potential environmental consequences. Please provide written comments or information regarding the action at your earliest convenience but no later than April 14, 2004. Also enclosed is a listing of the Federal, state, and local agencies that have been contacted (see Attachment 2). If there are any additional agencies that you feel should review and comment on the proposal, please include them in your distribution of this letter and the attached materials.

Please forward your written comments on the proposal to: Mr. Ron Lamb, Project Manager, e²M, Inc., 3949 Pender Drive, Suite 120, Fairfax, VA 22030. Written comments can also be sent via fax to: 703-273-1711.

Sincerely,

engineering-environmental Management, Inc.

Ronald E. Lamb
Project Manager

Attachments:

1. Description of Proposed Action and Alternatives
2. Distribution List

3949 Pender Drive, Suite 120, , Fairfax, VA 22030 • (703) 273-7171 • Fax (703) 273-1711

SACRAMENTO, CA JACKSONVILLE, FL SAN DIEGO, CA SAN ANTONIO, TX DENVER, CO PHILADELPHIA, PA TULSA, OK



March 18, 2004

Mr. Eugene Jansak
Industrial Waste Specialist
Metro Wastewater Reclamation District
6450 York Street
Denver, CO 80229-7499

Dear Mr. Jansak:

On behalf of the Department of Defense and the 460th Air Base Wing, engineering-environmental Management, Inc. (e²M) is preparing an Environmental Assessment on the proposed establishment of a "Center of Excellence" at Buckley Air Force Base, Colorado. The "Center of Excellence" would centralize the Department's technical and scientific mission and involve three components: (1) the staffing of approximately 350 military and civilian personnel at the facility, (2) construction of approximately 40,000 square feet of temporary, modular offices, and (3) construction of a permanent facility of approximately 180,000 square feet. The modular offices would be removed when the permanent facility is completed. The Description of Proposed Action and Alternatives (DOPAA) is included with this correspondence as Attachment 1.

The environmental impact analysis process for this proposal is being conducted by the Department of Defense in accordance with the Council on Environmental Quality guidelines pursuant to the requirements of the National Environmental Policy Act of 1969. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation by reviewing the attached DOPAA and solicit your comments concerning the proposal and any potential environmental consequences. Please provide written comments or information regarding the action at your earliest convenience but no later than April 14, 2004. Also enclosed is a listing of the Federal, state, and local agencies that have been contacted (see Attachment 2). If there are any additional agencies that you feel should review and comment on the proposal, please include them in your distribution of this letter and the attached materials.

Please forward your written comments on the proposal to: Mr. Ron Lamb, Project Manager, e²M, Inc., 3949 Pender Drive, Suite 120, Fairfax, VA 22030. Written comments can also be sent via fax to: 703-273-1711.

Sincerely,

engineering-environmental Management, Inc.

Ronald E. Lamb
Project Manager

Attachments:

1. Description of Proposed Action and Alternatives
2. Distribution List

3949 Pender Drive, Suite 120, , Fairfax, VA 22030 • (703) 273-7171 • Fax (703) 273-1711

SACRAMENTO, CA JACKSONVILLE, FL SAN DIEGO, CA SAN ANTONIO, TX DENVER, CO PHILADELPHIA, PA TULSA, OK



March 18, 2004

Mr. Eugene Jansak
Industrial Waste Specialist
Metro Wastewater Reclamation District
6450 York Street
Denver, CO 80229-7499

Dear Mr. Jansak:

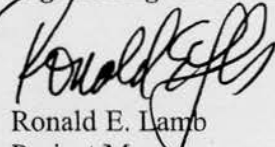
On behalf of the Department of Defense and the 460th Air Base Wing, engineering-environmental Management, Inc. (e²M) is preparing an Environmental Assessment on the proposed establishment of a "Center of Excellence" at Buckley Air Force Base, Colorado. The "Center of Excellence" would centralize the Department's technical and scientific mission and involve three components: (1) the staffing of approximately 350 military and civilian personnel at the facility, (2) construction of approximately 40,000 square feet of temporary, modular offices, and (3) construction of a permanent facility of approximately 180,000 square feet. The modular offices would be removed when the permanent facility is completed. The Description of Proposed Action and Alternatives (DOPAA) is included with this correspondence as Attachment 1.

The environmental impact analysis process for this proposal is being conducted by the Department of Defense in accordance with the Council on Environmental Quality guidelines pursuant to the requirements of the National Environmental Policy Act of 1969. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation by reviewing the attached DOPAA and solicit your comments concerning the proposal and any potential environmental consequences. Please provide written comments or information regarding the action at your earliest convenience but no later than April 14, 2004. Also enclosed is a listing of the Federal, state, and local agencies that have been contacted (see Attachment 2). If there are any additional agencies that you feel should review and comment on the proposal, please include them in your distribution of this letter and the attached materials.

Please forward your written comments on the proposal to: Mr. Ron Lamb, Project Manager, e²M, Inc., 3949 Pender Drive, Suite 120, Fairfax, VA 22030. Written comments can also be sent via fax to: 703-273-1711.

Sincerely,

engineering-environmental Management, Inc.



Ronald E. Lamb
Project Manager

Attachments:

1. Description of Proposed Action and Alternatives
2. Distribution List

3949 Pender Drive, Suite 120, , Fairfax, VA 22030 • (703) 273-7171 • Fax (703) 273-1711

SACRAMENTO, CA JACKSONVILLE, FL SAN DIEGO, CA SAN ANTONIO, TX DENVER, CO PHILADELPHIA, PA TULSA, OK



DEPARTMENT OF THE AIR FORCE
460TH AIR BASE WING (AFSPC)

JUN 03 2004

Lt Col Christopher C. McLane
460th Civil Engineer Squadron
660 S. Aspen Street, Stop 86
Buckley AFB CO 80011-9551

Jill Barker
Chief, Ecological Services Operation Division
U.S. Fish and Wildlife Service REgion 6
P.O. Box 25486
Denver Federal Center
Denver CO 80225

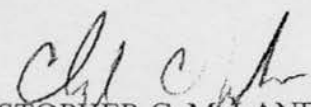
Dear Ms. Barker

The Air Force has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) to establish a Department of Defense Center of Excellence, which would consist of three components: staffing of approximately 350 military and civilian personnel, construction and operation of temporary modular offices, and construction and operation of a permanent Center. The proposed action is required to revitalize and transform the Department's technical and scientific information mission responsibilities. The Draft EA and Draft FONSI are attached for your information, review, and comment.

The public comment period for this EA is 30 days. Please provide any written comments to:

1Lt Fontanetta/Elise Sherva
460 CES/CEVP
660 S Aspen Street, Stop 86
Buckley AFB CO 80011-9551

If you have any questions please feel free to contact Ms. Elise Sherva, NEPA Program Manager, at 720-847-9077, Email elise.sherva@buckley.af.mil or 1Lt Anthony Fontanetta, Acting Environmental Planning Chief, at 720-847-9187, Email anthony.fontanetta@buckley.af.mil.


CHRISTOPHER C. McLANE, Lt Col, USAF
Base Civil Engineer

2 Atach:
Draft EA
Draft FONSI



DEPARTMENT OF THE AIR FORCE
460TH AIR BASE WING (AFSPC)

JUN 03 2004

Lt Col Christopher C. McLane
460th Civil Engineer Squadron
660 S. Aspen Street, Stop 86
Buckley AFB CO 80011-9551

Bruce Rosenlund
Colorado Field Supervisor
U.S. Fish and Wildlife Service
755 Parfet Street, Suite 496
Lakewood CO 80215

Dear Mr. Rosenlund

The Air Force has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) to establish a Department of Defense Center of Excellence, which would consist of three components: staffing of approximately 350 military and civilian personnel, construction and operation of temporary modular offices, and construction and operation of a permanent Center. The proposed action is required to revitalize and transform the Department's technical and scientific information mission responsibilities. The Draft EA and Draft FONSI are attached for your information, review, and comment per the National Environmental Policy Act. Please note that Section 7 consultation was initiated under a separate cover 14 April 04.

The public comment period for this EA is 30 days. Please provide any written comments to:

1Lt Fontanetta/Elise Sherva
460 CES/CEVP
660 S Aspen Street, Stop 86
Buckley AFB CO 80011-9551

If you have any questions please feel free to contact Ms. Elise Sherva, NEPA Program Manager, at 720-847-9077, Email elise.sherva@buckley.af.mil or 1Lt Anthony Fontanetta, Acting Environmental Planning Chief, at 720-847-9187, Email anthony.fontanetta@buckley.af.mil.

CHRISTOPHER C. McLANE, Lt Col, USAF
Base Civil Engineer

2 Attach:
Draft EA
Draft FONSI



DEPARTMENT OF THE AIR FORCE
460TH AIR BASE WING (AFSPC)

Lt Col Christopher C. McLane
460th Civil Engineer Squadron
660 S. Aspen Street, Stop 86
Buckley AFB CO 80011-9551

APR 14 2004

Bruce Rosenlund
U.S. Fish and Wildlife Service
755 Parfet Street, Suite 496
Lakewood CO 80215

Dear Mr. Rosenlund

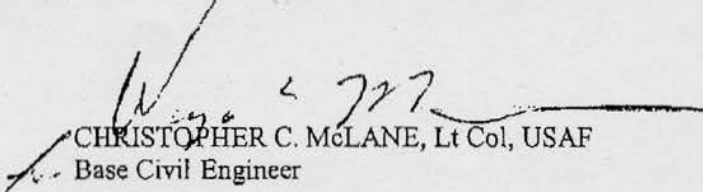
The Department of Defense is preparing a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for construction and operation of a new Denver Security Operations Center "Center of Excellence" facility at Buckley AFB. The proposed action would centralize the Department's technical and scientific mission and involve three components; the staffing of approximately 350 people, the construction of approximately 40,000 square feet of temporary modular office space and construction of permanent office space of approximately 180,000 square feet. The modular buildings would be removed when the permanent facility is completed. A draft copy of the Description of Proposed Action and Alternatives (DOPAA) is enclosed. The proposed action and two alternative locations for the permanent facility are shown on the attached figures.

We are requesting initiation of Section 7 consultation per the Endangered Species Act. We have assessed the potential environmental effects of the proposed project and determined that the proposed actions are not likely to adversely affect federally listed and candidate species.

A 30 day public comment period for this EA is scheduled for mid May. Please provide any written comments to:

1Lt Fontanetta/Floyd Hatch
460 CES/CEVP
660 S Aspen Street, Stop 86
Buckley AFB CO 80011-9551

If you have any questions please contact 1Lt Anthony Fontanetta, Acting Environmental Planning Chief at 720-847-9187 or email anthony.fontanetta@buckley.af.mil or Mr. Floyd Hatch at 720-847-6937.


CHRISTOPHER C. McLANE, Lt Col, USAF
Base Civil Engineer

2 Attachments
DOPAA
Location Figures



DEPARTMENT OF THE AIR FORCE
460TH AIR BASE WING (AFSPC)

JUN 03 2004

Lt Col Christopher C. McLane
460th Civil Engineer Squadron
660 S. Aspen Street, Stop 86
Buckley AFB CO 80011-9551

Georgianna Contiguglia
State Historic Preservation Officer
Colorado History Museum
1300 Broadway
Denver CO 80203-2137

Dear Ms. Contiguglia

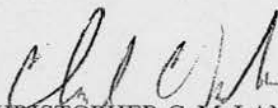
The Air Force has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) to establish a Department of Defense Center of Excellence, which would consist of three components: staffing of approximately 350 military and civilian personnel, construction and operation of temporary modular offices, and construction and operation of a permanent Center. The proposed action is required to revitalize and transform the Department's technical and scientific information mission responsibilities. The Draft EA and Draft FONSI are attached for your information, review, and comment per the National Environmental Policy Act.

In compliance with Section 106 of the National Historic Preservation Act, Buckley Air Force Base determined that the Proposed Action and Alternatives would not have an adverse effects on historic or prehistoric properties. Section 106 consultation was initiated 14 Apr 04 and your office concurred with this finding for the two proposed alternatives in a letter dated 21 Apr 04; however, a determination was not made for the Proposed Action. Please provide your determination for the Proposed Action.

The public comment period for this EA is 30 days. Please provide any written comments to:

1Lt Fontanetta/Elise Sherva
460 CES/CEVP
660 S Aspen Street, Stop 86
Buckley AFB CO 80011-9551

If you have any questions please to contact Ms. Sherva, NEPA Program Manager, at 720-847-9077, Email elise.sherva@buckley.af.mil or 1Lt Fontanetta, Acting Acting Environmental Planning Chief, at 720-847-9187, Email anthony.fontanetta@buckley.af.mil.


CHRISTOPHER C. McLANE, Lt Col, USAF
Base Civil Engineer

2Atach:
Draft EA
Draft FONSI



COLORADO
HISTORICAL
SOCIETY

The Colorado History Museum 1300 Broadway Denver, Colorado 80203-2137

April 21, 2004

Lt. Col. Christopher C. McLane
460th Civil Engineer Squadron
660 South Aspen Street, Stop 86
Buckley AFB, CO 80011-9551

Re: Construction of a new Denver Security Operations Center "Center of Excellence"
(CHS #43048).

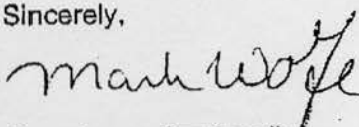
Dear Lt. Col. McLane,

Thank you for your correspondence dated April 14, 2004 and received by our office on April 16, 2004 regarding the above-mentioned project.

After reviewing the submitted information, our office concurs with your finding of *no adverse effect* under Section 106 of the National Historic Preservation Act for the two proposed alternatives.

If we may be of further assistance, please contact Amy Pallante, our Section 106 Compliance Coordinator, at (303) 866-4678.

Sincerely,

for 
Georgianna Contiguglia
State Historic Preservation Officer

cc: Mr. Floyd Hatch, Buckley AFB
1Lt. Fontanetta, Buckley AFB



DEPARTMENT OF THE AIR FORCE
460TH AIR BASE WING (AFSPC)

Lt Col Christopher C. McLane
460th Civil Engineer Squadron
660 South Aspen Street, Stop 86
Buckley AFB CO 80011-9551

APR 14 2004

Georgianna Contiguglia
State Historic Preservation Officer
Colorado History Museum
1300 Broadway
Denver CO 80203-2137

Dear Ms. Contiguglia

The Department of Defense is preparing an Environmental Assessment for the construction and operation of a new Denver Security Operations Center "Center of Excellence". The proposed action would centralize the Department's technical and scientific mission and involve three components; the staffing of approximately 350 people, the construction of approximately 40,000 square feet of temporary modular office space and construction of permanent office space of approximately 180,000 square feet. The modular buildings would be removed when the permanent facility is completed. A draft copy of the Description of Proposed Action and Alternatives (DOPAA) is attached. The proposed action and two alternative locations for the permanent facility are shown on attached figures.

In compliance with Section 106 of the National Historic Preservation Act, Buckley Air Force Base has determined that the proposed action, and alternatives, would not have an adverse affect on historic properties. Building information, with the Colorado Resource number and dates of construction in parenthesis, are outlined below.

Proposed Action Location:

- Buildings 402 (5AH2332), 403 (5AH2288), 404 (5AH2289) (1970). and 405 (5AH2333) (1976) per your letter dated 26 January 2004 are potentially eligible for the National Register under Criterion C.
- Building 465 (5AH2304) (1987) is not eligible for inclusion on the National Register of Historic Places as it is less than 50 years old.
- Buildings 470 (1995), 485 (1998), 490 (1997) and 498 (1997) were constructed or in place after 1990. Therefore, they are not eligible for inclusion on the National Register of Historic Places.

Alternative One Location:

- Building 1201 (1991), 1202 (1991), 1203 (1993), 1204 (1993), 1205 (1993), 1207 (1993) were constructed or in place after 1990. Therefore, they are not eligible for inclusion on the National Register of Historic Places.

- Building 1101 (5AH2277)(1952): Not recommended eligible for listing on the National Register of Historic Places since it does not display sufficient historic significance or retain sufficient physical integrity.

- Buildings 1108 (1968), 1109 (1968) and 1110 (1986), are not eligible for inclusion on the National Register of Historic Places as they are less than 50 years old.

- Buildings 1301, 1302, 1303, 1004 (1990) and 1305 (1998) were constructed or in place after 1990. Therefore, they are not eligible for inclusion on the National Register of Historic Places.

Alternative Two Location:

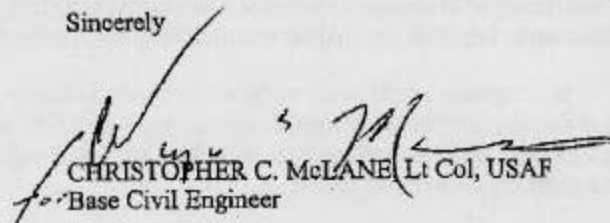
- Buildings 1550 (1994) and 1052 (2000) were constructed or in place after 1990. Therefore, they are not eligible for inclusion on the National Register of Historic Places.

Please provide written comments and/or concurrence to:

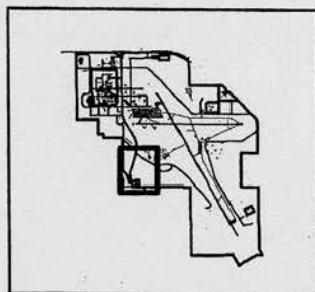
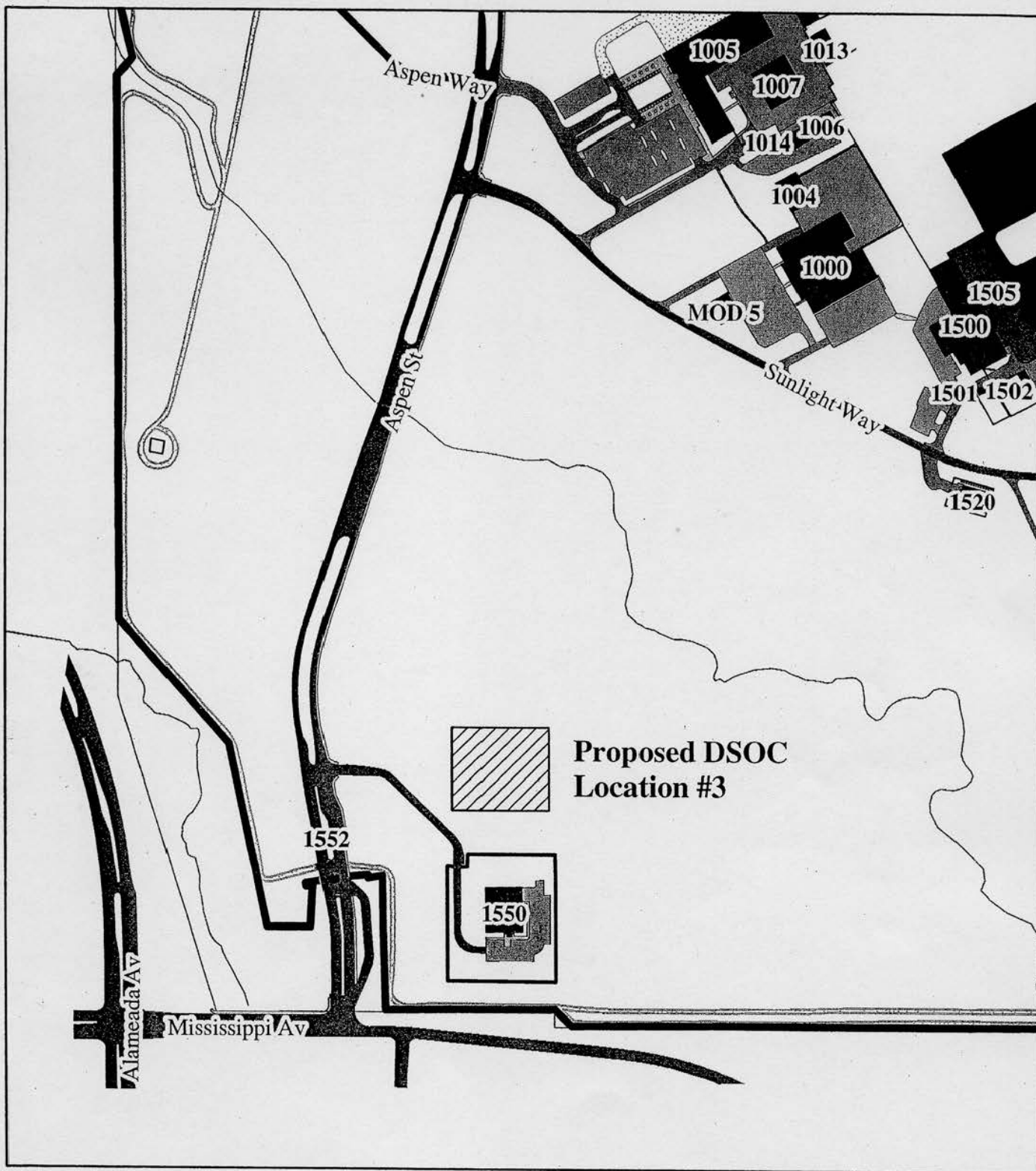
1 Lt Fontanetta/Floyd Hatch
460 CES/CEVP
660 S. Aspen Street, Mail Stop 86
Buckley AFB CO 80011-9551

If you have any questions please feel free to contact 1 Lt Anthony Fontanetta, Acting Planning Chief at 720-847-9187, email anthony.fontanetta@buckley.af.mil or Mr. Floyd Hatch, Cultural Resources Manager at 720-847-6937, email floyd.hatch@buckley.af.mil.

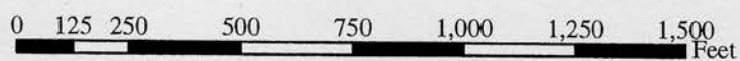
Sincerely


CHRISTOPHER C. McLANE Lt Col, USAF
Base Civil Engineer

2 Attachments
Draft DOPPA
Location figures



Index



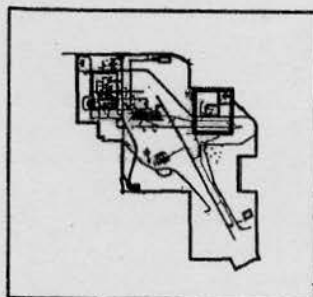
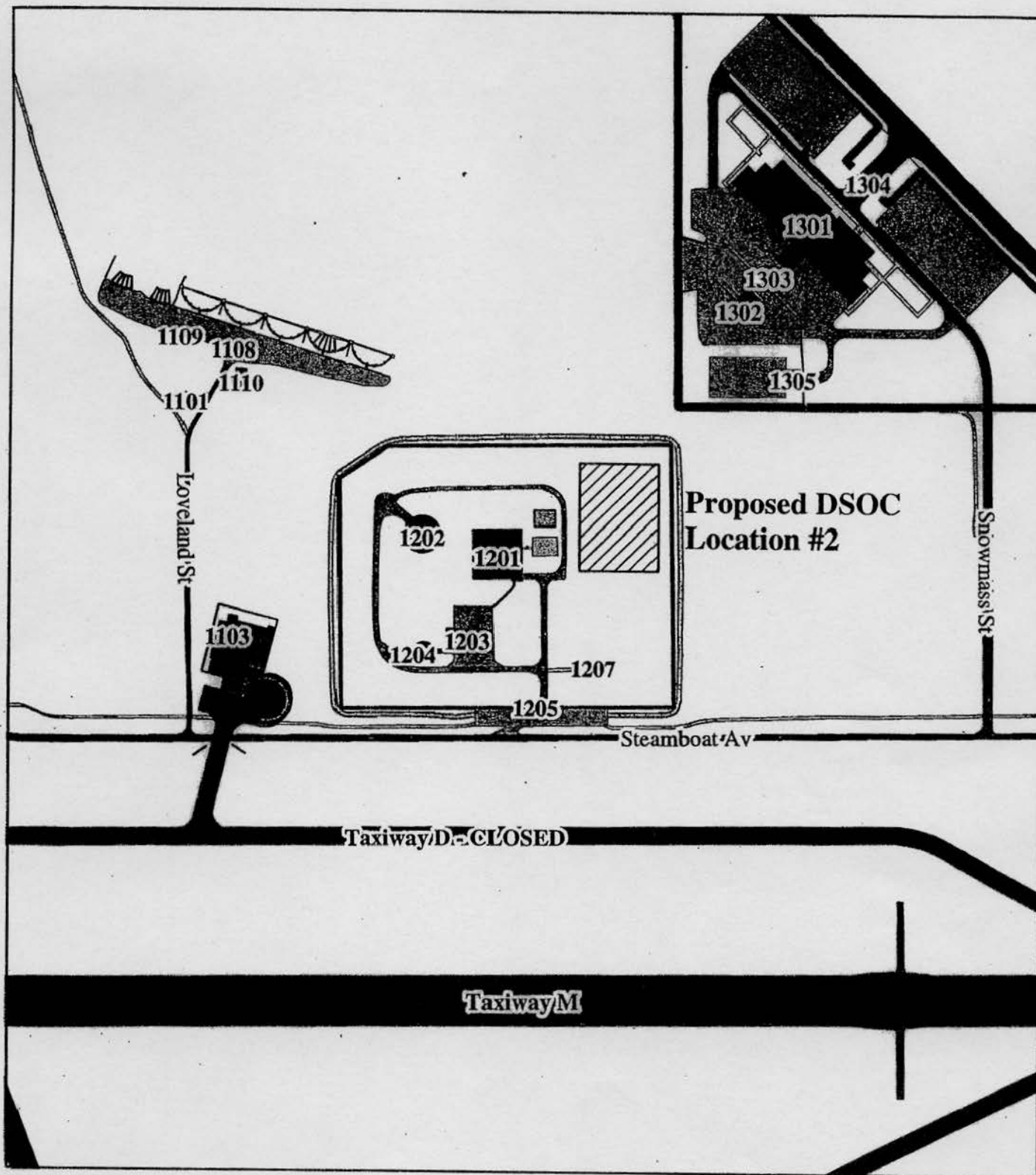
Proposed DSOC Location #3 Buckley AFB, CO



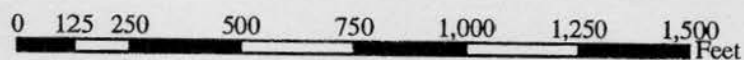
Geographic Integration Office

GIO Office
Buckley AFB, CO





Index

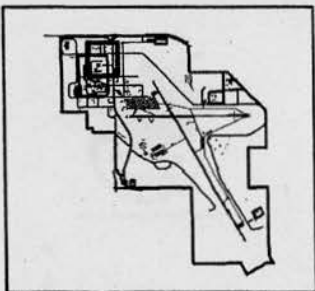
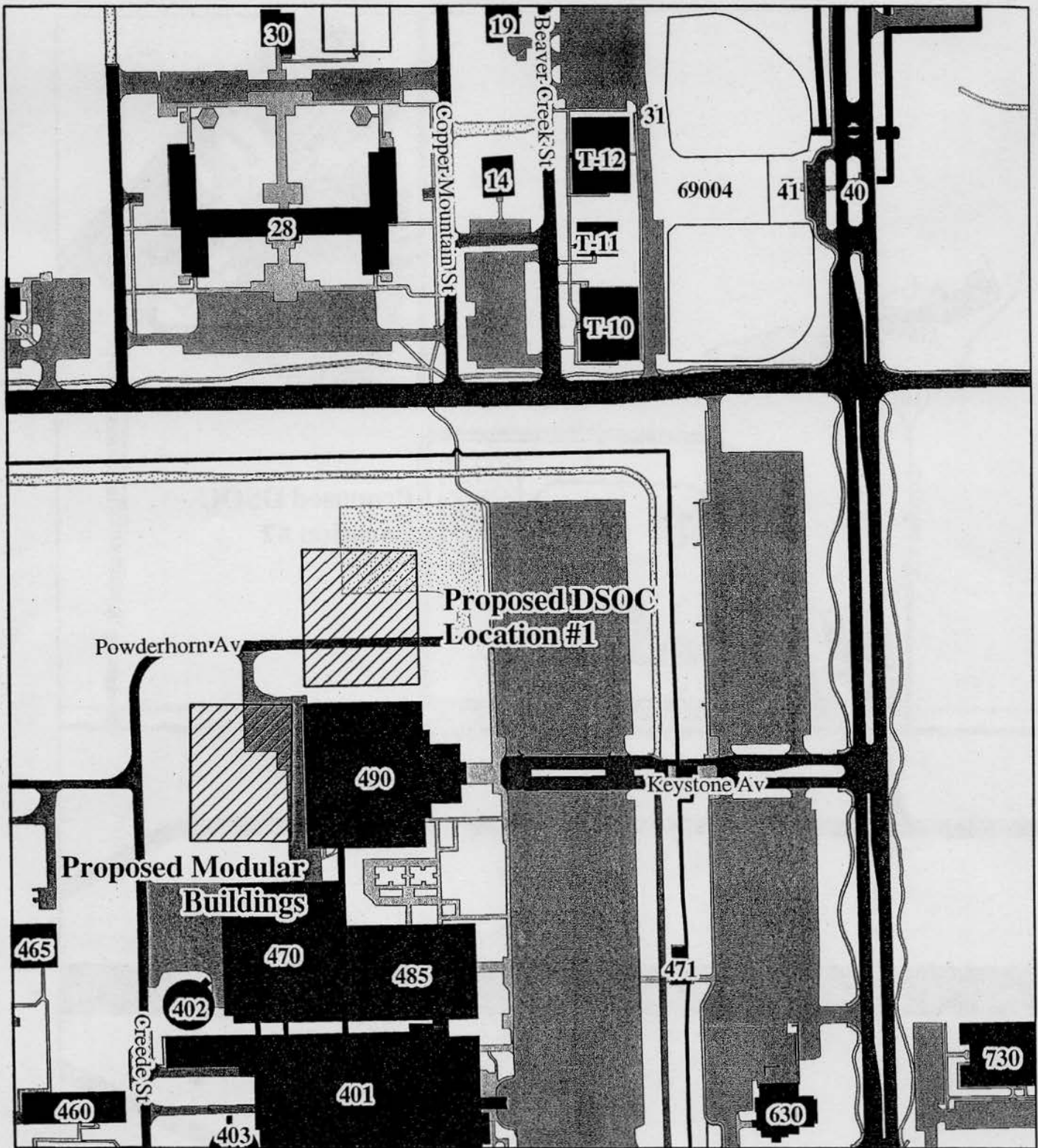


Proposed DSOC Location #2 Buckley AFB, CO



GIO Office
Buckley AFB, CO





Index

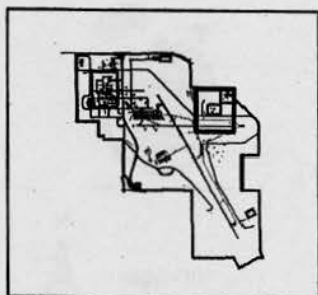
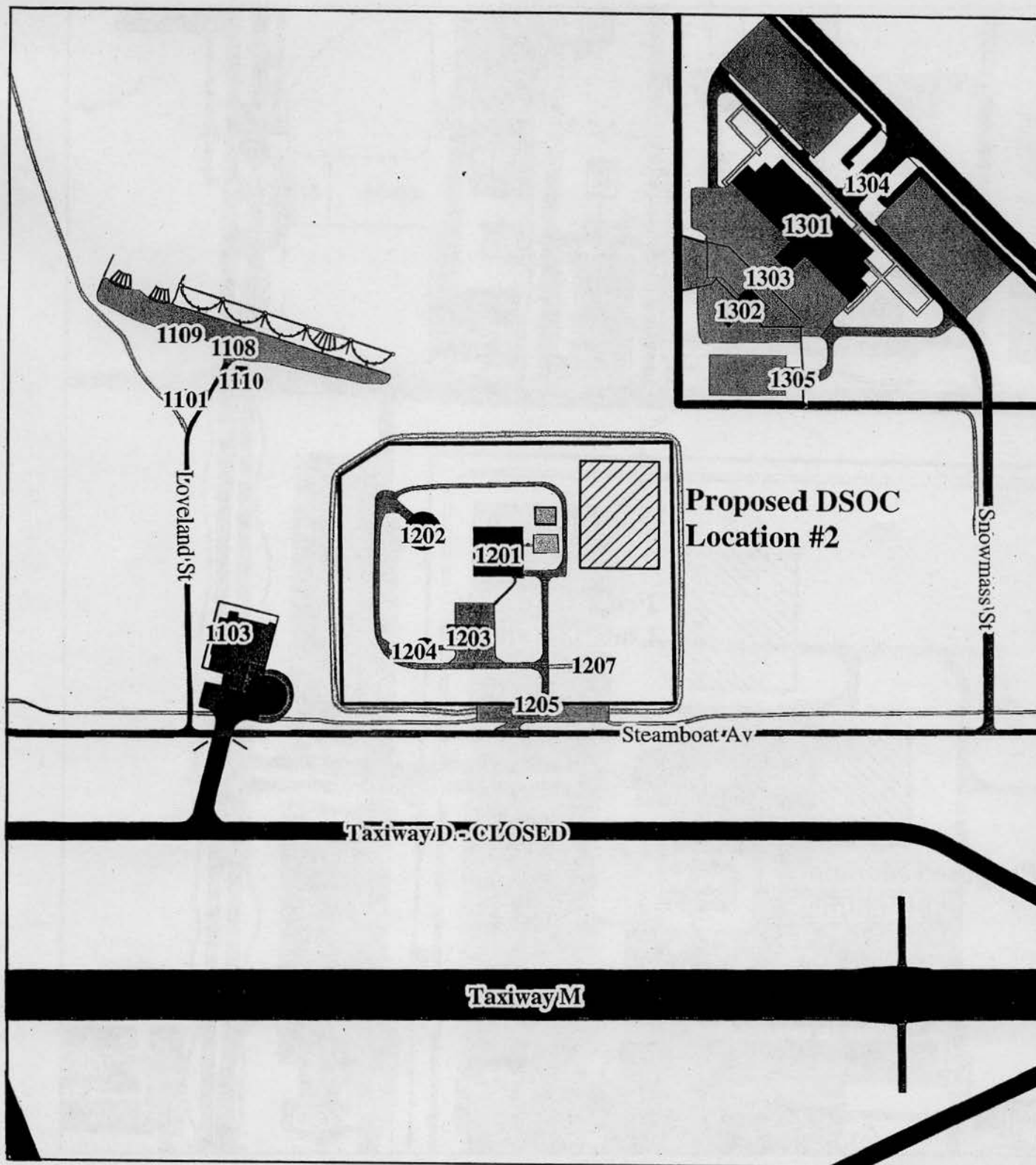
0 100 200 400 600 800 1,000 Feet

Proposed DSOC Location #1 Buckley AFB, CO

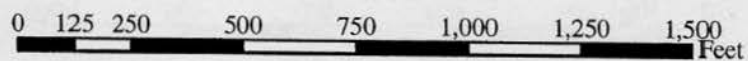


GIO Office
Buckley AFB, CO





Index



Proposed DSOC Location #2 Buckley AFB, CO



Geographic Information Office

GIO Office
Buckley AFB, CO





DEPARTMENT OF THE AIR FORCE
460TH AIR BASE WING (AFSPC)

JUN 03 2004

Lt Col Christopher C. McLane
460th Civil Engineer Squadron
660 S. Aspen Street, Stop 86
Buckley AFB CO 80011-9551

Cynthia Cody
NEPA Unit Chief
U.S. Environmental Protection Agency, Region 8
999 18th Street, Suite 500
Denver CO 80202


Dear Ms. Cody

The Air Force has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) to establish a Department of Defense Center of Excellence, which would consist of three components: staffing of approximately 350 military and civilian personnel, construction and operation of temporary modular offices, and construction and operation of a permanent Center. The proposed action is required to revitalize and transform the Department's technical and scientific information mission responsibilities. The Draft EA and Draft FONSI are attached for your information, review, and comment.

The public comment period for this EA is 30 days. Please provide any written comments to:

1Lt Fontanetta/Elise Sherva
460 CES/CEVP
660 S Aspen Street, Stop 86
Buckley AFB CO 80011-9551

If you have any questions please feel free to contact Ms. Elise Sherva, NEPA Program Manager, at 720-847-9077, Email elise.sherva@buckley.af.mil or 1Lt Anthony Fontanetta, Acting Environmental Planning Chief, at 720-847-9187, Email anthony.fontanetta@buckley.af.mil.


CHRISTOPHER C. McLANE, Lt Col, USAF
Base Civil Engineer

2 Atach:
Draft EA
Draft FONSI



DEPARTMENT OF THE AIR FORCE
460TH AIR BASE WING (AFSPC)

JUN 03 2004

Lt Col Christopher C. McLane
460th Civil Engineer Squadron
660 S. Aspen Street, Stop 86
Buckley AFB CO 80011-9551

David Rathke
U.S. Environmental Protection Agency, Region 8
999 18th Street, Suite 500
Denver CO 80202

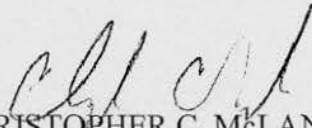
Dear Mr Rathke

The Air Force has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) to establish a Department of Defense Center of Excellence, which would consist of three components: staffing of approximately 350 military and civilian personnel, construction and operation of temporary modular offices, and construction and operation of a permanent Center. The proposed action is required to revitalize and transform the Department's technical and scientific information mission responsibilities. The Draft EA and Draft FONSI are attached for your information, review, and comment.

The public comment period for this EA is 30 days. Please provide any written comments to:

1Lt Fontanetta/Elise Sherva
460 CES/CEVP
660 S Aspen Street, Stop 86
Buckley AFB CO 80011-9551

If you have any questions please feel free to contact Ms. Elise Sherva, NEPA Program Manager, at 720-847-9077, Email elise.sherva@buckley.af.mil or 1Lt Anthony Fontanetta, Acting Environmental Planning Chief, at 720-847-9187, Email Anthony.fontanetta@buckley.af.mil.


CHRISTOPHER C. McLANE, Lt Col, USAF
Base Civil Engineer

2 Atach:
Draft EA
Draft FONSI



DEPARTMENT OF THE AIR FORCE
460TH AIR BASE WING (AFSPC)

JUN 03 2004

Lt Col Christopher C. McLane
460th Civil Engineer Squadron
660 S. Aspen Street, Stop 86
Buckley AFB CO 80011-9551

Eliza Moore
Wildlife Manager
Colorado Division of Wildlife
6060 South Broadway
Denver CO 80216

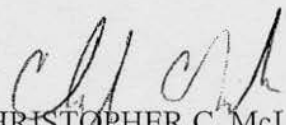
Dear Ms. Moore

The Air Force has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) to establish a Department of Defense Center of Excellence, which would consist of three components: staffing of approximately 350 military and civilian personnel, construction and operation of temporary modular offices, and construction and operation of a permanent Center. The proposed action is required to revitalize and transform the Department's technical and scientific information mission responsibilities. The Draft EA and Draft FONSI are attached for your information, review, and comment.

The public comment period for this EA is 30 days. Please provide any written comments to:

1Lt Fontanetta/Elise Sherva
460 CES/CEVP
660 S Aspen Street, Stop 86
Buckley AFB CO 80011-9551

If you have any questions please feel free to contact Ms. Elise Sherva, NEPA Program Manager, at 720-847-9077, Email elise.sherva@buckley.af.mil or 1Lt Anthony Fontanetta, Acting Environmental Planning Chief, at 720-847-9187, Email anthony.fontanetta@buckley.af.mil.


CHRISTOPHER C. McLANE, Lt Col, USAF
Base Civil Engineer

2 Atach:
Draft EA
Draft FONSI

STATE OF COLORADO

Bill Owens, Governor

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF WILDLIFE

AN EQUAL OPPORTUNITY EMPLOYER

Bruce McCloskey, Acting Director
6060 Broadway
Denver, Colorado 80216
Telephone: (303) 297-1192



*For Wildlife-
For People*

April 14, 2004

Ron Lamb
e²M, Inc.
3949 Pender Drive
Suite 120
Fairfax, VA 22030

RE: Preparation of an Environmental Assessment on the proposed construction of approximately 40,000 square feet of temporary modular offices and the construction of a permanent "Center of Excellence" of 180,000 square feet.

Dear Mr. Lamb:

Thank you for the opportunity to comment on the proposed construction of the "Center of Excellence" on Buckley Air Force Base (BAFB). The project would include construction of temporary modular offices, which would encompass about 40,000 square feet. The proposed projects would include construction of a permanent 180,000 a square feet, "Center of Excellence". The modular offices would be removed, and the site restored to original condition upon completion of the permanent facility.

Our goal at the Colorado Division of Wildlife (CDOW) is to provide complete, consistent and timely information to all entities who request comment on matters within our statutory authority and our mission-which is to protect, preserve, enhance and manage wildlife and their environment for the use, benefit, and enjoyment of the people of Colorado and its visitors.

While we have not recently visited the site, the majority of currently undeveloped land at BAFB consists primarily of fragmented habitat surrounded by development. Noxious weeds such as thistle and knapweed have also been found in past visits. The Division would expect to find a variety of small ground-dwelling mammals, ground-nesting birds, red fox, coyotes, and passerine birds at the proposed site. These animals are capable of moving to the undisturbed habitat surrounding the proposed site.

Currently, CDOW policy directs our efforts towards proposals that will potentially have high impacts to wildlife and wildlife habitat. The emphasis of the Division's concerns is on large acreages, critical habitats, wildlife diversity, and impacts to species of special concern, or those that are state or federally endangered. Due to the small acreage and low availability of undisturbed habitat adjacent to the proposed site, impacts of the proposed construction may be characterized as minimal.

This may not mean that the landscape has no value to wildlife or value to the community. It is important to remember that incremental and cumulative loss of natural areas and open spaces will, over time, significantly degrade the overall quality of wildlife habitat in the area.

DEPARTMENT OF NATURAL RESOURCES, Russell George, Executive Director
WILDLIFE COMMISSION, Philip James, Chair • Jeffrey Crawford, Vice-Chair • Brad Phelps, Secretary
Members, Bernard Black • Tom Burke • Rick Enstrom • Claire O'Neal • Robert Shoemaker • Ken Torres
Ex Officio Members, Russell George and Don Ament

Therefore, in this case, we want to focus our recommendations on planning and implementing your proposal to minimize negative impacts and maximize potential enhancements to support living with wildlife in our community. The CDOW recommends the following:

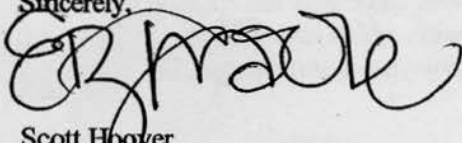
- If prairie dogs are present we recommend that they either be captured alive and moved to another location or humanely killed before any earth-moving occurs.
- Burrowing owls are classified as Threatened in Colorado and killing one is illegal. They live in prairie dog holes and we suggest a survey for the presence of burrowing owls prior to any earth-moving. They are susceptible to being buried and killed by construction activity.
 - If construction takes place between November 1 and February 28, it is very unlikely that owls would be present since they migrate out of the state during the winter.
 - The Division suggests a ground-nesting bird survey prior to construction if the activity is going to take place any time between March 1 and October 31.

Riparian habitat is important to many species, one of which is the threatened Preble's Meadow Jumping Mouse (PMJM). East Toll Gate Creek flows through BAFB, so there is a possibility that the PMJM could be present. Figure 2-1 of the Description of Proposed Action and Alternatives identifies East Toll Gate Creek as potential PMJM habitat. The Division of Wildlife recommends a 150 ft. buffer zone on either side of East Toll Creek to protect the valuable riparian habitat.

The spread and control of noxious weeds on the sites is a concern of the CDOW and for wildlife. The CDOW recommends implementing weed control practices that the state and/or BAFB may have in place. Once the modular offices are removed, we suggest that any re-vegetation be performed with native trees and a mix of native grasses that will restore short-grass prairie habitat.

If you have any further questions, please contact District Wildlife Manager Joe Padia at (303)291-7162.

Sincerely,



Scott Hoover
NE Region Manager



DEPARTMENT OF THE AIR FORCE
460TH AIR BASE WING (AFSPC)

AUG 05 2004

Lt Col Christopher C. McLane
Commander, 460th Civil Engineer Squadron
660 South Aspen Street, Stop 86
Buckley AFB CO 80011-9551

Ed LaRock, Environmental Protection Specialist
Colorado Department of Public Health and Environment
Hazardous Materials and Waste Management Division
4300 Cherry Creek Drive South
Denver CO 80246

Dear Mr. LaRock

Thank you for your comments, which were dated 25 June 04, on the Environmental assessment (EA) for the Denver Security Operation Center (DSOC).

Table 3-4 has been updated per your comment to read: "The Air Force is revising a No Further Response Action Planned Decision Document for regulatory concurrence."

The discrepancy between statements about PAH detections in sections 3.10.2 and 4.10.1 has been corrected by deleting the words "below CDPHE standards" from the third sentence, third paragraph under "Environmental Restoration Program" in section 3.10.2. In 4.10.1, the second paragraph under *Hazardous Materials*, the last sentence is also revised to clarify that just two of the six samples contained benzo(a)pyrene in excess of the standard. A re-examination of the investigation report and data reveals that the statement in 3.10.2 under *Environmental Restoration Program* that 3 samples contained dieldrin is not correct. While the reporting limit for dieldrin in three samples was higher than the state standard due to dilution of the sample for other parameters, the investigation report also states "No estimated concentrations of dieldrin were detected in any of the samples." The data was not "J"-flagged. (A "J" flag would indicate that the parameter was detected above the methods detection limit but could not be quantified below the reporting limit.) The text in section 3.10.2., under the "Environmental Restoration Program", has been replaced as follows : "Although the quantifiable reporting limit for dieldrin in three samples was higher than the state CDPHE surface soil standard due to dilution of the samples, no estimated concentrations of dielden above the method detection limit were reported. Dieldrin was not found in other samples at this site, nor has it been detected at other sites on the base. No other information indicates that pesticides would be a concern at this site. Therefore, it is reasonable to presume that pesticides are not likely to be present."

Your comment regarding Asbestos Containing Material is noted. The EA has not been changed since it states that Buckley AFB would coordinate with the Colorado Department of Public Health and Environment (CDPHE). The EA is a decision-making tool and should not be confused with a Statement of Work or a contract, where specific guidance is written.

If you have any further questions please feel free to contact Ms. Elise Sherva, NEPA Program Manager, at 720-847-9077, E-mail elise.sherva@buckley.af.mil.

A handwritten signature in black ink, appearing to read 'C. McLane', is positioned above the printed name.

CHRISTOPHER C. McLANE, Lt Col, USAF
Base Civil Engineer

Sherva Elise L Civ 460 CES/CEVP

From: ED J LAROCK [ed.larock@state.co.us]
Sent: Friday, June 25, 2004 4:00 PM
To: anthony.fontanetta@BUCKLEY.AF.MIL; Elise.Sherva@BUCKLEY.AF.MIL; rlamb@e2m.net
Cc: Janet.Wade@BUCKLEY.AF.MIL; Mark.Spangler@BUCKLEY.AF.MIL; rathke.david@epamail.epa.gov; Monica Sheets
Subject: EA for DSOC at BAFB

Dear Mr. Lamb, Lt. Fontanetta, and Ms. Sherva:

Please see the correction to number 1:

The Colorado Department of Public Health and Environment (CDPHE) has reviewed the Environmental Assessment of the Proposed Denver Security Operations Center (DSOC) Center of Excellence Buckley Air Force Base, Colorado dated June 2004 and received June 4, 2004. Per page 2 of the FONSI, CDPHE is submitting comments within a 30-day review period:

- 1) Table 3-4 - ERP Site 5, Former Fire Training Area No. 1, has been proposed for No Further Action by the Air Force, however, the Air Force is revising the NFRAP document for regulatory concurrence.
- 2) Section 4.10.1, Proposed Action, Hazardous Materials - The final sentence in this section states that fill material samples contain benzo(a)pyrene in excess of the CDPHE Surface Soil Standard. This is consistent with Section 3.10.2, Environmental Restoration Program, page 3-41, paragraph three, sentence one. However, sentence three of this same paragraph on page 3-41 states these were isolated occurrences below CDPHE standards. Please clarify which statement is correct. Additionally, page 3-41 discusses that the presence or absence of Dieldrin in the soil can not be concluded based on analytical detection limits. This potential soil concern should be discussed further under Environmental Consequences, Hazardous Materials, Section 4.10.1.
- 3) Section 4.10.1, Asbestos Containing Materials (ACM) - Since the proposed action site is within an area of potential ACM from WWII development, any discovery of ACM will be immediately reported to the appropriate CDPHE authorities and will be managed and abated according to a plan approved by CDPHE.

Thank you for the opportunity to comment. Please contact me with any questions.

Ed LaRock
Hazardous Materials and Waste Management Division
Colorado Dept. of Public Health and Environment
4300 Cherry Creek Drive South
Denver, CO 80246-1530
303-692-3324
Fax 303-759-5355
ed.larock@state.co.us



DEPARTMENT OF THE AIR FORCE
460TH AIR BASE WING (AFSPC)

JUN 03 2004

Lt Col Christopher C. McLane
460th Civil Engineer Squadron
660 S. Aspen Street, Stop 86
Buckley AFB CO 80011-9551

Ed LaRock
Federal Facilities HMWM 2800
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive, South
Denver CO 80246-1530

Dear Mr. LaRock

The Air Force has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) to establish a Department of Defense Center of Excellence, which would consist of three components: staffing of approximately 350 military and civilian personnel, construction and operation of temporary modular offices, and construction and operation of a permanent Center. The proposed action is required to revitalize and transform the Department's technical and scientific information mission responsibilities. The Draft EA and Draft FONSI are attached for your information, review, and comment.

The public comment period for this EA is 30 days. Please provide any written comments to:

1Lt Fontanetta/Elise Sherva
460 CES/CEVP
660 S Aspen Street, Stop 86
Buckley AFB CO 80011-9551

If you have any questions please feel free to contact Ms. Elise Sherva, NEPA Program Manager, at 720-847-9077, Email elise.sherva@buckley.af.mil or 1Lt Anthony Fontanetta, Acting Environmental Planning Chief, at 720-847-9187, Email Anthony.fontanetta@buckley.af.mil.

CHRISTOPHER C. McLANE, Lt Col, USAF
Base Civil Engineer

2 Attach:
Draft EA
Draft FONSI

Ron Lamb

From: ED J LAROCK [ed.larock@state.co.us]
Sent: Tuesday, April 06, 2004 6:27 PM
To: rlamb@e2m.net
Cc: Janet.Wade@BUCKLEY.AF.MIL; Mark.Spangler@BUCKLEY.AF.MIL;
Rathke.David@epamail.epa.gov; Monica Sheets
Subject: DSOC proposed action for BAFB

Dear Mr. Lamb,

The Colorado Department of Public Health and Environment (CDPHE) has reviewed the Description of Proposed Action and Alternatives, Denver Security Operations Center (DSOC) Center of Excellence, Buckley Air Force base, Colorado dated March 2004 and received March 23, 2004.

Based on this review, I have the following comments:

1) It appears that both the proposed action preferred alternative and the proposed modular offices are not adjacent to any Environmental Restoration Program (ERP) Sites. Alternative 2 is near ERP Site 5.

However, the AF ERP program is conducting a basewide preliminary assessment which may identify other environmental concerns not previously identified at the base, potentially in areas proposed for construction.

2) It appears that both the proposed action preferred alternative and the proposed modular offices are located in areas of historic WWII structures with the potential for buried asbestos containing materials and/or asbestos contaminated soil. Any construction in these areas shall address potential asbestos issues in cooperation with CDPHE.

Thank you for the opportunity to comment. Please contact me with any questions.

Ed LaRock
Hazardous Materials and Waste Management Division
Colorado Dept. of Public Health and Environment
4300 Cherry Creek Drive South
Denver, CO 80246-1530
303-692-3324
Fax 303-759-5355
ed.larock@state.co.us



DEPARTMENT OF THE AIR FORCE
460TH AIR BASE WING (AFSPC)

AUG 05 2004

Lt Col Christopher C. McLane
Commander, 460th Civil Engineer Squadron
660 South Aspen Street, Stop 86
Buckley AFB CO 80011-9551

Jane Hann
Environmental Project Manager
Colorado Department of Transportation-Region 6
Planning and Environmental-Region 6
2000 South Holly
Denver CO 80222

Dear Ms Hann

Thank you for your comments, which were dated 24 June 04, on the Environmental Assessment (EA) to establish a Department of Defense "Center of Excellence" at Buckley Air Force Base, Colorado. Responses to your comments follow:

Major comments

The EA is a decision-making document, where the exact building dimensions and parking lot locations are unknown until the decision has been made to go forward with the proposed action. The configuration of any buildings, parking lots, and utilities are developed during the design phases. Therefore, the figures in our EA's only show the proposed project "area".

The following was added to Section 4.6.1: "The Proposed Action would be designed to avoid the drainage swale and wetland vegetation to the greatest extent practical. If the Proposed Action cannot be designed to avoid impacting the drainage swale and wetland vegetation, the loss of wetland vegetation would be mitigated by planting a larger amount of wetland vegetation in a new drainage swale." A supplemental EA, with a Finding of No Practicable Alternative would be developed if the proposed action is selected and the design drawings, to include stormwater run-off, indicate an impact to the swale.

Refer to the previous response, where the impact would be covered if a Supplemental EA were prepared.

Site 3 (LF-003) is included in the table. The table has been updated to include the words "Base Landfill" following the words Base Dump for clarification purposes.

The following sentence has been added to the EA. "The Alternative 2 site, which is northeast of the Office of Special Investigation (OSI), would utilize existing utility corridors that serve the OSI facility and that do not cross ERP Site 3, Base landfill."

Wetlands and infrastructure (including traffic) have been added to the cumulative effects table. The Proposed Action would avoid the drainage swale and wetland vegetation to the greatest extent practical. If the Proposed Action cannot be implemented without impacting the drainage swale and wetland vegetation, the loss of wetland vegetation would be mitigated by planting a larger amount of wetland vegetation in a new drainage swale. Increased vehicle traffic would have a minor impact on level of service (LOS) at Buckley AFB.

Buckley AFB's EA's are prepared per 32 Code of Federal Regulation 989, Environmental Impact Analysis Process. Section 989.15 (a) states "The FONSI (40 CFR 1508.13) briefly describes why an action would not have a significant effect on the environment and thus will not be the subject of an EIS. The FONSI must summarize the EA or, preferably, have it attached and incorporated by reference, and must note any other environmental documents related to the action."

Other comments

As noted in the description of the Proposed Action, (section 2.3, page 2-2), the impetus for the creation of the Center of Excellence was a Congressional Directed Action to consolidate diverse functions. The relocation of those functions results in no environmental impacts or consequences at the existing sites, as current operations at those sites will simply absorb any relinquished space and site capability. Since the total population of the new Center would not be very large, would not come from a single site, and would be spread out over time, the consequences of the personnel movement becomes nontrivial only for the receiving site at Buckley AFB.

Figure 3-3 was modified to combine the Fondis silt loam (1 to 5 percent slopes) and to combine the Weld-Deertrail and Weld silt loams (0 to 3 percent slopes). An appendix on each individual soil series was not included since the information would not substantially add value to the analysis.

Discussion of the Renohill-Buick-Little association was separated into a new paragraph.

The following paragraphs have been added to Section 3.9.2 of the EA: "According to CDOT 2003 State Highway Traffic Statistics, the annual average daily traffic (AADT) volume on 6th Avenue (SH 30) near the entrance to the base was 5,767, with a Design Hour Volume (DHV) of 11 percent, which represents 634 vehicles in the average peak hours. The AADT is relatively low, and several times lower than the AADT for 6th Avenue between I-225 and Airport Boulevard, west of the Base (CDOT, 2004)." "No current Level of Service (LOS) data is available for roads within Buckley AFB. A 1997 traffic study found that, other than during weekday morning and evening traffic peaks, base roads and intersections operated at an acceptable level. Currently, vehicles entering the base slow or are held for processing at a gate, resulting in vehicles entering the base at a steady pace. Congestion has not been observed at

nearby base intersections, such as Aspen and Steamboat Avenues (Johnson, 2004). In addition, Buckley AFB has recently undertaken infrastructure improvements to include upgrades to South Aspen Street, construction of a new road around the Munitions Storage Area, improvements to A-Basin Avenue, upgrades to the Perimeter Patrol Road, and maintenance of the entire base transportation network.

The following has been added to Section 4.9.1 of the EA: "An additional 350 vehicles per day represents a six percent increase in AADT volume on 6th Avenue near the entrance to the Base. During the average peak hour, the addition of 120 vehicles represents a nearly 19 percent increase in traffic volume on 6th Avenue near the entrance to the Base. However, the current AADT and DHV are relatively low. Therefore, the Proposed Action would have a minor direct effect on traffic around the Base. In addition, the Proposed Action would have a negligible, indirect effect on traffic from increased service vehicles and personnel to support the 350 new workers"

Natural gas was added to Section 4.9, which included the statement that the projected 1 percent increase in natural gas is a negligible to minor impact.

If you have any further questions please feel free to contact Ms. Elise Sherva, NEPA Program Manager, at 720-847-9077, email elise.sherva@buckley.af.mil.



CHRISTOPHER C. McLANE, Lt Col, USAF
Base Civil Engineer

STATE OF COLORADO

DEPARTMENT OF TRANSPORTATION
Region 6

2000 South Holly Street
Denver, Colorado 80222
(303) 757-9932



June 24, 2004

Ms. Elise Sherva
460 CES/CEVP
660 South Aspen Street, Stop 86
Buckley Air Force Base, CO 80011-9551

Dear Ms. Sherva,

Thank you for the opportunity to provide comments (due July 3, 2004) pertaining to the Draft Environmental Assessment and Draft Finding of No Significant Impact to establish a Department of Defense "Center of Excellence" at Buckley Air Force Base, Colorado.

Major Comments:

- All land-based impacts from the alternatives should be shown on the maps, including parking, building size, and the location options for the utilities and transmission cables. I see some areas are shaded in the SHPO consultation letter in Appendix B. These graphics should be put into Chapter 2 with the parking and utilities, etc. added as well. I'm guessing that the utilities and transmission cable impacts can be one of the discerning factors in impact analysis.
- Pg 3-20, Second paragraph, line 5. A maintained drainage ditch can still be a jurisdictional wetland if the water eventually drains into a "Waters of the US". The only thing different with a maintained drainage ditch is that it is exempt from having to permit activities that keep the ditch free of vegetation. If the ditch is filled or otherwise impacted, then the ditch falls within the jurisdictional designation and is subject to 404 permitting. The lack of vegetation does not keep it from being a wetland because that type of wetland would fall within the definition of an Atypical Situation described in Section F of the Corps of Engineers Wetlands Delineation Manual, 1987.
- Pg 4-13, Vegetation impacts section. Due to the wetland observation in the previous comment, a wetland impact should be accounted for under Chapter 4 for the Proposed Action.
- Pg 3-42. Add information on "Site 3 – Base Landfill" to this table.
- Pg 4-28. Alt. 2, ERP. No mention of the route for utilities, etc. is included in this description. With the landfill covering such a big area, the routing of utilities should be addressed with regard to this land use limitation.
- Pg 5-5. Cumulative Effects table. Add the wetland impact to the table and address wetland impacts for cumulative impacts. Also add Infrastructure (especially roads and traffic) impacts to this table. Level of Service (LOS) changes as well as road improvements that handle increased LOS over time would be an issue here.
- The Air Force Center of Environmental Excellence has typically required the FONSI to include a brief summary on each of the environmental resources as to what impacts are expected and why

STATE OF COLORADO

DEPARTMENT OF TRANSPORTATION
Region 6

2000 South Holly Street
Denver, Colorado 80222
(303) 757-9932



they are not significant. This makes the FONSI a stand-alone document. Please check to see if Buckley AFB is required to follow these guidelines.

Other Comments:

- There is no discussion of the impacts resulting from the relocation of the dispersed locations currently handling the "Center of Excellence" functions. No mention is made concerning where these functions are currently operating.
- Pg 3-12, Figure 3-3. It is difficult to follow the Fondis-Weld associations mentioned in the text in this figure. Perhaps the discussion would be more clear if the soil series are combined by patterns as discussed in the text (this is not getting rid of the separate soil series designations on the figure – just helping the reader see which ones are being lumped together for discussion purposes.) Additionally, since the separate soil series are not discussed anywhere, perhaps an appendix could be added that would provide the basic information for these soil series such as erodability and shrink/swell characteristics.
- Pg 3-13, First Paragraph, line 8. Is the Renohill-Buick-Little association supposed to be a separate discussion from the Alluvial Land-Nunn association? If so, this should be the start of a new paragraph.
- Infrastructure – Traffic: There is no discussion of Level of Service for the roads nor how the increase of 120 vehicles during morning rush hour would impact those services. It was noted that the gate can handle the increase but what about the roads, especially off base.
- Pg 4-22. Natural Gas. No conclusion of impact is provided.

Thanks again for the opportunity to comment and we await your response to the above issues.

Sincerely,

Jane Hann
Environmental Project Manager
CDOT Region 6
Planning and Environmental

Cc: Robin Geddy CDOT HQ
Jim Paulmeno CDOT-R6



DEPARTMENT OF THE AIR FORCE
460TH AIR BASE WING (AFSPC)

JUN 03 2004

Lt Col Christopher C. McLane
460th Civil Engineer Squadron
660 S. Aspen Street, Stop 86
Buckley AFB CO 80011-9551

Brad Beckman
Manager Environmental Planning
Colorado Department of Transportation
4201 East Arkansas Ave.
Denver CO 80222

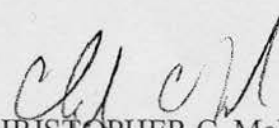
Dear Mr. Beckman

The Air Force has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) to establish a Department of Defense Center of Excellence, which would consist of three components: staffing of approximately 350 military and civilian personnel, construction and operation of temporary modular offices, and construction and operation of a permanent Center. The proposed action is required to revitalize and transform the Department's technical and scientific information mission responsibilities. The Draft EA and Draft FONSI are attached for your information, review, and comment.

The public comment period for this EA is 30 days. Please provide any written comments to:

1Lt Fontanetta/Elise Sherva
460 CES/CEVP
660 S Aspen Street, Stop 86
Buckley AFB CO 80011-9551

If you have any questions please feel free to contact Ms. Elise Sherva, NEPA Program Manager, at 720-847-9077, Email elise.sherva@buckley.af.mil or 1Lt Anthony Fontanetta, Acting Environmental Planning Chief, at 720-847-9187, Email Anthony.fontanetta@buckley.af.mil.


CHRISTOPHER C. McLANE, Lt Col, USAF
Base Civil Engineer

2 Atach:
Draft EA
Draft FONSI



DEPARTMENT OF THE AIR FORCE
460TH AIR BASE WING (AFSPC)

AUG 05 2004

Lt Col Christopher C. McLane
Deputy Commander, 460th Civil Engineer Squadron
660 South Aspen Street, Stop 86
Buckley AFB CO 80011-9551

Denise M. Balkas
City of Aurora
Director of Plans
15151 E. Alameda Parkway
Aurora CO 80012

Dear Ms. Balkas

Thank you for your letter, dated 22 June 04, on the Draft Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for Proposed Denver Security Operations Center (DSOC), Buckley AFB. Our responses follow:

Page 3-8, last paragraph. The following sentences were deleted – However, lower pollutant-specific "major source" permitting thresholds apply in nonattainment areas. For example, the Title V permitting threshold for an "extreme" O₃ nonattainment area is 1- tons per year of potential VOC or NO_x emissions.

Page 3-9, last paragraph. The last paragraph was replaced with "Emission sources at Buckley include both stationary and mobile sources. Stationary sources are included in the base's Title V permit and include boilers and heaters, backup generators, and industrial chemical usage. Mobile sources on the base include civilian and military motor vehicles and aircraft. Most of the on-road motor vehicles on the base are regulated by the State and are routinely tested through the Air Care Colorado program."

Page 3-10, First full paragraph. No changes were made to the EA. The last paragraph of Section 3.3.2 describes the existing conditions surrounding Buckley Air Force Base and would not be considered a definition of the resource.

Page 4-4, 3rd paragraph. Table reference was changed from Table 4-1 to Table 4-2.

Page 4-6, 1st paragraph. The last sentence was replaced with "Emissions from employee motor vehicles are calculated to be approximately 50 tons per year (page D-24) and total annual emissions from the project are estimated to be approximately 68 tons per year, which is below the conformity de minimis thresholds."

Page 4-6, 3rd paragraph. The word "well" was deleted from the first sentence.

Page 4-7, Table 4-2 has been updated to include emission breakdowns of construction, POVs, etc.

Page 5-4, Cumulative Impacts – Emissions from the Proposed Action were combined with emissions from the 16 projects scheduled for 2005. The cumulative emissions from these projects is still below the de minimis threshold (see below). The following text and table will be inserted into Section 5.1.

"As shown in Table 5-2, when air quality emissions from the Proposed Action are added to the above construction projects, the cumulative impacts would be considered clearly *de minimis* (see also Appendix D)".

Table 5-2. Cumulative Effects on Air Quality

	NOx (tpy)	VOC (tpy)	CO (tpy)	SO2 (tpy)	PM10 (tpy)
2005 Projected Emissions from 16 projects	8.00	3.00	4.00	0.90	32.00
Proposed Action	3.51	3.57	50.63	0.26	3.12
Total 2005 Emissions	11.51	6.57	54.63	1.16	35.12
<i>de minimis</i> threshold	100	100	100	NA	100

Page 5-5, Table 5-1, Resource Area – Air Quality – Table revised for attainment/maintenance for CO. Revised data taken into consideration but did not change conclusions (see also response to comment #8 above).

Comments on Appendix D

General Comments

Thank you for your comment. This information will be forwarded to the Contractor who will be preparing the next Construction EA and the Contractor who is in the process of preparing the Capital Improvements EA (Programmatic EA that covers cumulative impacts).

Divider pages have been added between major elements of Appendix D.

Specific Comments

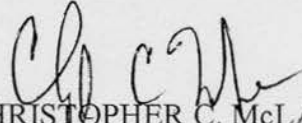
Page D-23, Arophoe changed to Arapahoe in the title of the first table in step 1.

Page D-24, First table in "Step 2" - The tables in Appendix D have been revised to use high instead of low altitude.

Page D-33 - Appendix D has been updated and references to other counties corrected.

Please contact Ms. Elise Sherva, NEPA Program Manager, at 720-847-9077, e-mail elise.sherva@buckley.af.mil if you have any questions or require further information.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ch C McLane', is positioned above the printed name.

CHRISTOPHER C. McLANE, Lt Col, USAF
Base Civil Engineer

City of Aurora

Planning Department
15151 E. Alameda Parkway
Aurora, Colorado 80012
Phone: 303-739-7250
Fax: 303-739-7268
www.auroragov.org



June 22, 2004

1st Lieutenant Fontanetta/Elise Sherva
460 CES/CEVP
660 S. Aspen Street, Stop 86
Buckley AFB, CO 80011-9551

Dear 1st Lieutenant Fontanetta/Elise Sherva:

Subject: Comments on Draft Environmental Assessment for Proposed Denver Security Operations Center (DSOC), Buckley AFB, June 2004

Thank you for providing us the opportunity to comment on the subject document. We have the following comments for your consideration:

Page 3-8, last paragraph – We recommend deleting the following two sentences, since they do not apply in the Denver metro area: “However, lower pollutant specific ... thresholds apply in nonattainment areas. For example, ... is 10 tons per year of potential VOC or NO_x emissions.”

Page 3-9, last paragraph – We recommend replacing the paragraph with the following text: “Emission sources at Buckley include both stationary and mobile sources. Stationary sources are included in the base’s Title V permit and include boilers and heaters, backup generators, and industrial chemical usage. Mobile sources on the base include civilian and military motor vehicles and aircraft. Most of the on-road motor vehicles on the base are regulated by CDPHE and are routinely tested through the Air Care Colorado program.”

Page 3-10, First full paragraph – We suggest moving the paragraph beginning “Eagles Nest Wilderness ...” to the end of Section 3.3.1 and deleting the last sentence of this paragraph.

Page 4-4, 3rd paragraph – The table reference in this paragraph should be changed from “Table 4-1” to “Table 4-2” since the emissions from the proposed action are presented in Table 4-2.

Page 4-6, 1st paragraph – We recommend removing the word “negligible” from the last sentence. Consider replacing the last sentence with the following text: “Emissions from employee motor vehicles are calculated to be approximately 50 tons per year (page D-24) and total annual emissions from the project are estimated to be approximately 68 tons per year which is below the conformity de minimis thresholds.”

Page 4-6, 3rd paragraph – We suggest deleting the qualifier “well” from the first sentence, since the calculated emissions are only about 30% below the de minimis thresholds.

Page 4-7 – Please provide a table that summarizes emissions from construction equipment, motor vehicles, and fugitive dust that clearly shows how the Calendar Year 2005, 2007, and 2008 total emission estimates were derived from the 33 pages of data presented in Appendix D.

Page 5-4, Cumulative Impacts – Cumulative impacts from the 16 projects in 2005 should be estimated and compared with the de minimis thresholds. Based on the calculations presented in the document, total emissions from all of the projects may be significant and may exceed the General Conformity de minimis thresholds. We suggest that Buckley personnel work with the CDPHE Air Pollution Control Division to incorporate cumulative emissions from all projects into the regional emission inventory in order to avoid a negative conformity finding.

Page 5-5, Table 5-1, Resource Area – Air Quality – The Denver metro area is designated attainment/maintenance for carbon monoxide. (Should be changed under column headings “Past Actions” and “Cumulative Effects”). The cumulative air quality impact of the Preferred Alternative and the 16 additional projects may be significant. The conclusion presented in the table should be re-evaluated following the completion of the cumulative air quality impact analysis.

Comments on Appendix D

General Comments:

1. This appendix provides an excellent treatment of air emission calculations and should be used as a model for future major project EA's at Buckley.
2. Consider inserting divider pages between sections of the appendix and explaining the organization of the appendix in the text. For example, it was difficult to determine the difference between the “Construction Combustion Emissions” presented on Pages D-4, D-10, and D-16.
3. Several specific comments on the Appendix follow:

Page D-23, Title for first table in “Step 1” – “Arapahoe” is misspelled.

Page D-24, First table in “Step 2” – “High Altitude” emission factors should be used for the calculations instead of the “Low Altitude” factors presented in the table.

Page D-33 – We suggest contacting Barbara Macrae at the Air Pollution Control Division at 303-692-3150 for the proper RVP and MTBE factors to use in the emission factor model. Colorado banned the use of MTBE as a fuel additive in 2002 and the RVP of fuel used in the Denver area is limited by the State Implementation Plan. Also, the counties listed are “Greene” and “Montgomery”, which were probably inadvertently left in the document from a previous analysis. We suggest recalculating project emissions with the corrected emission factors.

1st Lieutenant Fontanetta/Elise Sherva
Page 3 of 3
June 22, 2004

Again, thank you for the opportunity to comment on the draft EA. Please contact John VanKirk at 303-326-8834 if you have any questions.

Sincerely,



Robert Watkins
Acting Director of Planning

RW:JV
Cc: Jim Ives, Environmental Program Supervisor

P:\coordination activities\2004\Enviro\BUCKLEY\Comments on Draft Environmental Assessment of Conversion to GSAB at BAFB.doc

rec'd 23 June 04
(18)



DEPARTMENT OF THE AIR FORCE
460TH AIR BASE WING (AFSPC)

JUN 03 2004

Lt Col Christopher C. McLane
460th Civil Engineer Squadron
660 S. Aspen Street, Stop 86
Buckley AFB CO 80011-9551

Denise Balkas
Director of Planning
City of Aurora
15151 E. Alameda
Aurora CO 80012


Dear Ms. Balkas

The Air Force has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) to establish a Department of Defense Center of Excellence, which would consist of three components: staffing of approximately 350 military and civilian personnel, construction and operation of temporary modular offices, and construction and operation of a permanent Center. The proposed action is required to revitalize and transform the Department's technical and scientific information mission responsibilities. The Draft EA and Draft FONSI are attached for your information, review, and comment.

The public comment period for this EA is 30 days. Please provide any written comments to:

1Lt Fontanetta/Elise Sherva
460 CES/CEVP
660 S Aspen Street, Stop 86
Buckley AFB CO 80011-9551

If you have any questions please feel free to contact Ms. Elise Sherva, NEPA Program Manager, at 720-847-9077, Email elise.sherva@buckley.af.mil or 1Lt Anthony Fontanetta, Acting Environmental Planning Chief, at 720-847-9187, Email Anthony.fontanetta@buckley.af.mil.


CHRISTOPHER C. McLANE, Lt Col, USAF
Base Civil Engineer

2 Atach:
Draft EA
Draft FONSI



DEPARTMENT OF THE AIR FORCE
460TH AIR BASE WING (AFSPC)

JUN 03 2004

Lt Col Christopher C. McLane
460th Civil Engineer Squadron
660 S. Aspen Street, Stop 86
Buckley AFB CO 80011-9551

James Ives, C.E.P.
Planning, Environmental Division
City of Aurora
15151 E. Alameda
Aurora CO 80012


Dear Mr. Ives

The Air Force has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) to establish a Department of Defense Center of Excellence, which would consist of three components: staffing of approximately 350 military and civilian personnel, construction and operation of temporary modular offices, and construction and operation of a permanent Center. The proposed action is required to revitalize and transform the Department's technical and scientific information mission responsibilities. The Draft EA and Draft FONSI are attached for your information, review, and comment.

The public comment period for this EA is 30 days. Please provide any written comments to:

1Lt Fontanetta/Elise Sherva
460 CES/CEVP
660 S Aspen Street, Stop 86
Buckley AFB CO 80011-9551

If you have any questions please feel free to contact Ms. Elise Sherva, NEPA Program Manager, at 720-847-9077, Email elise.sherva@buckley.af.mil or 1Lt Anthony Fontanetta, Acting Environmental Planning Chief, at 720-847-9187, Email Anthony.fontanetta@buckley.af.mil.


CHRISTOPHER C. McLANE, Lt Col, USAF
Base Civil Engineer

2 Atach:
Draft EA
Draft FONSI



DEPARTMENT OF THE AIR FORCE
460TH AIR BASE WING (AFSPC)

JUN 03 2004

Lt Col Christopher C. McLane
460th Civil Engineer Squadron
660 S. Aspen Street, Stop 86
Buckley AFB CO 80011-9551

Eugene Jansak
Industrial Waste Specialist
Metro Wastewater Reclamation District
6450 York Street
Denver CO 80229-7499


Dear Mr. Jansak

The Air Force has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) to establish a Department of Defense Center of Excellence, which would consist of three components: staffing of approximately 350 military and civilian personnel, construction and operation of temporary modular offices, and construction and operation of a permanent Center. The proposed action is required to revitalize and transform the Department's technical and scientific information mission responsibilities. The Draft EA and Draft FONSI are attached for your information, review, and comment.

The public comment period for this EA is 30 days. Please provide any written comments to:

1Lt Fontanetta/Elise Sherva
460 CES/CEVP
660 S Aspen Street, Stop 86
Buckley AFB CO 80011-9551

If you have any questions please feel free to contact Ms. Elise Sherva, NEPA Program Manager, at 720-847-9077, Email elise.sherva@buckley.af.mil or 1Lt Anthony Fontanetta, Acting Environmental Planning Chief, at 720-847-9187, Email anthony.fontanetta@buckley.af.mil.


CHRISTOPHER C. McLANE, Lt Col, USAF
Base Civil Engineer

2 Atach:
Draft EA
Draft FONSI

PUBLIC NOTICE

Notice of Availability

Draft Finding of No Significant Impact for the Environmental Assessment of the Proposed Denver Security Operations Center (DSOC) "Center of Excellence" at Buckley Air Force Base, Colorado

Buckley Air Force Base, Colorado - An Environmental Assessment (EA) of the Proposed DSOC "Center of Excellence" at Buckley Air Force Base, Colorado has been prepared. The Department of Defense (DOD) and U.S. Air Force (USAF) 460th Air Base Wing (460 ABW) are proposing to issue a Finding of No Significant Impact (FONSI) based on this EA. The analysis considered potential effects of the Proposed Action, two alternatives, and the No Action Alternative on ten resource areas: air quality, noise, land use, geological resources, water resources, biological resources, cultural resources, socioeconomic and environmental justice, infrastructure, and hazardous materials and waste. The results, as found in the EA, show that the Proposed Action does not constitute a major federal action significantly affecting the quality of the natural or human environment.

Copies of the FONSI and EA showing the analysis are available for review at Aurora Central Library, 14949 E. Alameda Parkway, Aurora, CO 80012 and at the Denver Public Library, 10 West 14th Avenue Parkway, Denver, CO 80204-2731.

Public comments on the FONSI and EA will be accepted for 30 days from the date of this publication.

Written comments and inquiries on the FONSI and EA should be directed to:
Mr. Ronald Lamb, Project Manager, e²M, 1510 West Canal Court, Suite 2000,
Littleton, CO, 80120.

PUBLIC NOTICE

Notice of Availability

**Draft Finding of No Significant Impact for the Environmental Assessment
of the Proposed Denver Security Operations Center (DSOC)
"Center of Excellence" at Buckley Air Force Base, Colorado**

Buckley Air Force Base, Colorado - An Environmental Assessment (EA) of the Proposed DSOC "Center of Excellence" at Buckley Air Force Base, Colorado has been prepared. The Department of Defense (DOD) and U.S. Air Force (USAF) 460th Air Base Wing (460 ABW) are proposing to issue a Finding of No Significant Impact (FONSI) based on this EA. The analysis considered potential effects of the Proposed Action, two alternatives, and the No Action Alternative on ten resource areas: air quality, noise, land use, geological resources, water resources, biological resources, cultural resources, socioeconomics and environmental justice, infrastructure, and hazardous materials and waste. The results, as found in the EA, show that the Proposed Action does not constitute a major federal action significantly affecting the quality of the natural or human environment.

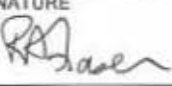

Copies of the FONSI and EA showing the analysis are available for review at Aurora Central Library, 14949 E. Alameda Parkway, Aurora, CO 80012 and at the Denver Public Library, 10 West 14th Avenue Parkway, Denver, CO 80204-2731.

Public comments on the FONSI and EA will be accepted for 30 days from the date of this publication.

Written comments and inquiries on the FONSI and EA should be directed to: Mr. Ronald Lamb, Project Manager, e²M, 1510 West Canal Court, Suite 2000, Littleton, CO 80120.

APPENDIX C

AIR FORCE FORM 813

REQUEST FOR ENVIRONMENTAL IMPACT ANALYSIS		Report Control Symbol RCS:					
INSTRUCTIONS: Section I to be completed by Proponent; Sections II and III to be completed by Environmental Planning Function. Continue on Separate Sheets as necessary. Reference appropriate item number(s).							
SECTION I - PROPONENT INFORMATION							
1. TO (Environmental Planning Function) 460 CES/CEVP		2. FROM (Proponent organization and functional address symbol) ADF/SG/FED					
		2a. TELEPHONE NO. 303-677-4228					
3. TITLE OF PROPOSED ACTION Denver Security Operations Center Program Initiative							
4. PURPOSE AND NEED FOR ACTION (Identify decision to be made and need data). See attached							
5. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES (DOPPA) (Provide sufficient details for evaluation of the total action) See attached.							
6. PROPONENT APPROVAL (Name and Grade) Robert Fraser, Chief, Facilities Engineering Division		6a. SIGNATURE 					
		6b. DATE 14 MAY 04					
SECTION II - PRELIMINARY ENVIRONMENTAL SURVEY. (Check appropriate box and describe potential environmental effects including cumulative effects.) (+ = positive effect; 0 = no effect; - = adverse effect; U = Unknown effect.		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%; text-align: center;">+</td> <td style="width: 25%; text-align: center;">0</td> <td style="width: 25%; text-align: center;">-</td> <td style="width: 25%; text-align: center;">U</td> </tr> </table>		+	0	-	U
+	0	-	U				
7. AIR INSTALLATION COMPATIBLE USE ZONE/LAND USE (Noise, accident potential, encroachment, etc.)		X					
8. AIR QUALITY (emissions, attainment status, state implementation plan, etc.)		X					
9. WATER RESOURCES (Quality, quantity, source, etc.)		X					
10. SAFETY AND OCCUPATIONAL HEALTH (Asbestos/radiation/chemical exposure, explosives safety quantity-distance, etc.)		X					
11. HAZARDOUS MATERIALS/WASTE (Use/storage/generation, solid waste, etc.)		X					
12. BIOLOGICAL RESOURCES (Wetlands/floodplains, flora, fauna, etc.)		X					
13. CULTURAL RESOURCES (Native American burial sites, archeological, historical, etc.)		X					
14. GEOLOGY AND SOILS (Topography, minerals, geothermal, Installation Restoration Program, seismicity, etc.)		X					
15. SOCIOECONOMIC (Employment/population projections, school and local fiscal impacts, etc.)		X					
16. OTHER (Potential impacts not addressed above.)							
SECTION III - ENVIRONMENTAL ANALYSIS DETERMINATION							
17. <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; text-align: center;">X</td> </tr> </table> PROPOSED ACTION QUALIFIES FOR A CATEGORICAL EXCLUSION (CATEX #) _____; OR PROPOSED ACTION DOES NOT QUALIFY FOR A CATEX; FURTHER ENVIRONMENTAL ANALYSIS IS REQUIRED.				X			
X							
18. REMARKS See attached							
19. ENVIRONMENTAL PLANNING FUNCTION CERTIFICATION (Name and Grade) Elise Sherva, GS-12		19a. SIGNATURE 					
		19b. DATE 5/14/04					

4. Purpose and Need for Action

The purpose and need for the Proposed Action is to improve the Department of Defense's ability to rapidly respond to its customers critical information needs by establishing a Center of Excellence that would centralize management, decision authority and mission activities. Faster data access and processing would enable the center to analyze more data, produce better quality reports and quickly meet the critical needs of the customer

5. Description of Proposed Action and Alternatives

The Proposed Action consists of three components. The first is the deployment to the Base of approximately 350 personnel to staff the DSOC. Personnel would consist of a mixture of military and civilians in a variety of pay grades and ranks. The second component is the construction of approximately 40,000 square feet of temporary modular buildings to house the staff. These modular buildings would be located west of Building 490. The final component is the construction of an approximately 180,000 square foot MILCON facility to be a permanent home for the DSOC operations. It would be located north of Building 490. Upon completion and occupancy of the MILCON structure, the temporary structures would be removed. The buildings (both temporary and MILCON) would require power, water, sewage, and chilled water utilities. The operations within the buildings would consist of offices and computer operations, with no industrial activities located in the operations.

Alternative 1 includes the same first two components as the preferred action, the staffing of the operation and the construction of the modular facilities. The Alternative 1 location for the MILCON facility would be near the Remote Terminal Facility on the eastern portion of the Base.

Alternative 2 includes the same first two components as the preferred action, the staffing of the operation and the construction of the modular facilities. The Alternative 2 location for the MILCON facility would be near the Office of Special Investigations on the southern portion of the Base.

18. Remarks

The proposed action and the alternative actions will be subject of an environmental assessment (EA) in accordance with appropriate regulations. The EA will include appropriate coordination with Federal, State and local agencies, as well as public review and comment. The EA will be funded and executed by the project proponent in coordination with the Base.

APPENDIX D

CLEAN AIR ACT AIR EMISSIONS CALCULATIONS

Appendix D - Clean Air Act General Conformity Analysis Emission Calculations

Emissions Estimates for EA of Denver Security Operations Center (DSOC) at Buckley AFB, CO

This workbook contains

- | | |
|-------------------|--|
| Summary | (this worksheet) Summarizes total emissions by calendar year. |
| Combustion | (one sheet for each calendar year) Estimates emissions from non-road equipment exhaust as well as painting. |
| Grading | (one sheet for each calendar year) Estimates the number of days of site preparation, to be used for estimating heavy equipment exhaust and earthmoving dust emissions) |
| Fugitive | (one sheet for each calendar year) Estimates fine particulate emissions from earthmoving, vehicle traffic, and windblown dust. |

Summary of Construction Emissions

		NOx (ton)	VOC (ton)	CO (ton)	SO2 (ton)	PM10 (ton)
CY2004	Combustion	4.10	1.70	3.77	0.20	0.31
	Fugitive Dust					1.12
	TOTAL CY2004	4.10	1.70	3.77	0.20	1.43

		NOx (ton)	VOC (ton)	CO (ton)	SO2 (ton)	PM10 (ton)
CY2007	Combustion	18.58	6.30	16.98	0.90	1.41
	Fugitive Dust					3.31
	TOTAL CY2007	18.58	6.30	16.98	0.90	4.72

		NOx (ton)	VOC (ton)	CO (ton)	SO2 (ton)	PM10 (ton)
CY2008	Combustion	18.58	6.30	16.98	0.90	1.41
	Fugitive Dust					3.31
	TOTAL CY2008	18.58	6.30	16.98	0.90	4.72

General Conformity Regional Significance Thresholds (10% of regional budget)

Since future year budgets were not readily available, actual 1999 air emissions inventories for the counties were used as an approximation of the regional inventory. Because the Proposed Action is several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan Denver Intrastate AQCR Target Year Emissions Budgets

Year	Point and Area Sources Combined				
	NOx (tpy)	VOC (tpy)	CO (tpy)	SO2 (tpy)	PM10 (tpy)
1999	116,502	129,662	871,835	65,039	37,394

Source: USEPA-AirData NET Tier Report (<http://www.epa.gov/air/data/nettier.html>). Site visited on 3/9/04

Determination Significance (Significance Threshold = 10%)

	Point and Area Sources Combined				
	NOx (tpy)	VOC (tpy)	CO (tpy)	SO2 (tpy)	PM10 (tpy)
Minimum -1999	116,502	129,662	871,835	65,039	37,394
2004 Emissions	4.10	1.70	3.77	0.20	1.43
Proposed Action %	0.0035%	0.0013%	0.0004%	0.0003%	0.0038%

Determination Significance (Significance Threshold = 10%)

	Point and Area Sources Combined				
	NOx (tpy)	VOC (tpy)	CO (tpy)	SO2 (tpy)	PM10 (tpy)
Minimum -1999	116,502	129,662	871,835	65,039	37,394
2007 Emissions	18.58	6.30	16.98	0.90	4.72
Proposed Action %	0.0159%	0.0049%	0.0019%	0.0014%	0.0126%

Determination Significance (Significance Threshold = 10%)

	Point and Area Sources Combined				
	NOx (tpy)	VOC (tpy)	CO (tpy)	SO2 (tpy)	PM10 (tpy)
Minimum -1999	116,502	129,662	871,835	65,039	37,394
2008 Emissions	18.58	6.30	16.98	0.90	4.72
Proposed Action %	0.0159%	0.0049%	0.0019%	0.0014%	0.0126%

Denver Security Operations Center (DSOC) at Buckley AFB, CO

Construction Combustion Emissions

Includes:

100% of Construct Temporary DSOC Modulars 40,000 ft²

Construction Site Air Emissions

Combustion Emissions of ROG, NO_x, SO₂, CO and PM₁₀ Due to Construction

User Inputs:

Total Building Area:	40,000 ft ²	(Construct DSOC Modular Facilities)
Total Paved Area:	0 ft ²	(None)
Total Disturbed Area:	0.92 acres	(Construct DSOC Modular Facilities)
Construction Duration:	1.0 years	(assumed)
Annual Construction Activity:	115 days/yr	(assumed to be 6 months)

Results:[Average per Year Over the Construction Period]

	ROG	NO _x	SO ₂	CO	PM ₁₀
Emissions, lbs/day	29.65	71.35	3.45	65.54	5.38
Emissions, tons/yr	1.70	4.10	0.20	3.77	0.31

Calculation of Unmitigated Emissions

Summary of Input Parameters

	ROG	NOx	SO2	CO	PM10
Total new acres disturbed:	0.92	0.92	0.92	0.92	0.92
Total new acres paved:	0.00	0.00	0.00	0.00	0.00
Total new building space, ft ² :	40,000	40,000	40,000	40,000	40,000
Total years:	1.00	1.00	1.00	1.00	1.00
Area graded, acres in 1 yr:	0.92	0.92	0.92	0.92	0.92
Area paved, acres in 1 yr:	0.00	0.00	0.00	0.00	0.00
Building space, ft ² in 1 yr:	40,000	40,000	40,000	40,000	40,000

Annual Emissions by Source (lbs/day)

	ROG	NOx	SO2	CO	PM10
Grading Equipment	0.2	1.5	0.1	0.3	0.3
Asphalt Paving	0.0	0.0	0.0	0.0	0.0
Stationary Equipment	6.7	5.5	0.4	1.2	0.3
Mobile Equipment	6.4	64.4	3.0	64.0	4.8
Architectural Coatings (Non-Res)	16.3	0.0	0.0	0.0	0.0
Total Emissions (lbs/day):	29.6	71.3	3.5	65.5	5.4

Emission Factors

Reference: Air Quality Thresholds of Significance, SMAQMD, 1994.

Source	SMAQMD Emission Factor				
	ROG	NOx	SO2 *	CO *	PM10
Grading Equipment	2.50E-01 lbs/acre/day	1.60E+00 lbs/acre/day	0.11 lbs/acre/day	0.35 lbs/acre/day	2.80E-01 lbs/acre/day
Asphalt Paving	2.62E-01 lbs/acre/day	NA	NA	NA	NA
Stationary Equipment	1.68E-04 lbs/day/ft ²	1.37E-04 lbs/day/ft ²	9.11E-06 lbs/day/ft ²	2.97E-05 lbs/day/ft ²	8.00E-06 lbs/day/ft ²
Mobile Equipment	1.60E-04 lbs/day/ft ²	1.61E-03 lbs/day/ft ²	7.48E-05 lbs/day/ft ²	0.0016 lbs/day/ft ²	1.20E-04 lbs/day/ft ²
Architectural Coatings (Non-Res)	8.15E-02 lbs/day/ft	NA	NA	NA	NA

* Factors for grading equipment and stationary equipment are calculated from AP-42 for diesel engines using ratios with the NOx factors.
Factors for mobile equipment are calculated from ratios with Mobile5a 2001 NOx emission factors for heavy duty trucks for each site.

Denver Security Operations Center (DSOC) at Buckley AFB, CO**Construction Fugitive Dust Emissions**

Calculation of PM10 Emissions Due to Site Preparation (Uncontrolled).

User Input Parameters / Assumptions

Acres graded per year:	0.92	acres/yr	(From "Combustion" worksheet)
Grading days/yr:	3.01	days/yr	(From "Grading" worksheet)
Exposed days/yr:	90	assumed days/yr	graded area is exposed
Grading Hours/day:	8	hr/day	
Soil piles area fraction:	0.10	(assumed fraction of site area covered by soil piles)	
Soil percent silt, s:	8.5	%	(mean silt content; expected range: 0.5 to 23, AP-42 Table 13.2.2-1)
Soil percent moisture, M:	25	%	(NOAA 2003 http://www.cpc.noaa.gov/products/soilmst/drought_composite.html#CSMRP)
Annual rainfall days, p:	90	days/yr	rainfall exceeds 0.01 inch/day (AP-42 Fig 13.2.2-1)
Wind speed > 12 mph %, I:	16	%	Avg. wind speed at Boulder, CO (ftp://ftp.wcc.nrcs.usda.gov/downloads/climate/windrose/colorado/boulder/)
Fraction of TSP, J:	0.5	(SCAQMD recommendation)	
Mean vehicle speed, S:	5	mi/hr	(On-site)
Dozer path width:	8	ft	
Qty construction vehicles:	0.33	vehicles	(From "Grading" worksheet)
On-site VMT/vehicle/day:	5	mi/veh/day	(Excluding bulldozer VMT during grading)
PM10 Adjustment Factor k	2.6	lb/VMT	(AP-42 Table 13.2.2-2 9/98 for PM10)
PM10 Adjustment Factor a	0.8	(dimensionless)	(AP-42 Table 13.2.2-2 9/98 for PM10)
PM10 Adjustment Factor b	0.4	(dimensionless)	(AP-42 Table 13.2.2-2 9/98 for PM10)
PM10 Adjustment Factor c	0.3	(dimensionless)	(AP-42 Table 13.2.2-2 9/98 for PM10)
Mean Vehicle Weight W	40	tons	assumed for aggregate trucks

Emissions Due to Soil Disturbance ActivitiesOperation Parameters (Calculated from User Inputs)

Grading duration per acre	26.2 hr/acre	
Bulldozer mileage per acre	1 VMT/acre	(Miles traveled by bulldozer during grading)
Construction VMT per day	2 VMT/day	
Construction VMT per acre	5.3 VMT/acre	(Travel on unpaved surfaces within site)

Equations Used (Corrected for PM10)

Operation	Empirical Equation	Units	AP-42 Section (5th Edition)
Bulldozing	$0.75(s^{1.5})/(M^{1.4})$	lbs/hr	Table 11.9-18.24, Overburden
Grading	$(0.60)(0.051)s^{2.0}$	lbs/VMT	Table 11.9-18.24
Vehicle Traffic	$[k(s/12)^a (W/3)^b / (M/0.2)^c] [(365-P)/365]$	lbs/VMT	Section 13.2.2

Source: Compilation of Air Pollutant Emission Factors, Vol. I, USEPA AP-42, Section 11.9 dated 7/98 and Section 13.2 dated 9/98

Calculation of PM10 Emission Factors for Each Operation

Operation	Emission Factor (mass/ unit)	Operation Parameter	Emission Factor (lbs/ acre)
Bulldozing	0.21 lbs/hr	26.2 hr/acre	5.5 lbs/acre
Grading	0.77 lbs/VMT	1 VMT/acre	0.8 lbs/acre
Vehicle Traffic	0.98 lbs/VMT	5.3 VMT/acre	5.2 lbs/acre

Emissions Due to Wind Erosion of Soil Piles and Exposed Graded Surface

Reference: Air Quality Thresholds of Significance, SCAQMD, 1994.

Soil Piles EF = $1.7(s/1.5)[(365 - H)/235](I/15)(J) = (s)(365 - H)(I)(J)/(3110.2941)$, p. A9-99.

Soil Piles EF = 6 lbs/day/acre covered by soil piles

Consider soil piles area fraction so that EF applies to graded area

Soil piles area fraction: 0.10 (Fraction of site area covered by soil piles)

Soil Piles EF = 0.6 lbs/day/acres graded

Graded Surface EF = 26.4 lbs/day/acre (recommended in CEQA Manual, p. A9-93).

Calculation of Annual PM10 Emissions

Source	Emission Factor	Graded Acres/yr	Exposed days/yr	Emissions lbs/yr	Emissions tons/yr
Bulldozing	5.5 lbs/acre	0.92	NA	5	0.00
Grading	0.8 lbs/acre	0.92	NA	1	0.00
Vehicle Traffic	5.2 lbs/acre	0.92	NA	5	0.00
Erosion of Soil Piles	0.6 lbs/acre/day	0.92	90	50	0.02
Erosion of Graded Surface	26.4 lbs/acre/day	0.92	90	2,182	1.09
TOTAL				2,242	1.12

Soil Disturbance EF: 11.5 lbs/acre

Wind Erosion EF: 27 lbs/acre/day

Back calculate to get EF: 810.5 lbs/acre/grading day

Denver Security Operations Center (DSOC) at Buckley AFB, CO**Construction (Grading) Schedule**

Estimate of time required to grade a specified area.

Input Parameters

Construction area: 0.92 acres/yr (from "Combustion" Worksheet)
 Qty Equipment: 0.11 (calculated based on acres disturbed)

Assumptions.

Terrain is mostly flat.

An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.

200 hp bulldozers are used for site clearing.

300 hp bulldozers are used for stripping, excavation, and backfill.

Vibratory drum rollers are used for compacting.

Stripping, Excavation, Backfill and Compaction require an average of two passes each.

Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 6th Ed., R. S. Means, 1992.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr	Equip-days per year
021 108 0550	Site Clearing	Dozer & rake, medium brush	0.6	acre/day	0.6	1.67	0.92	1.53
021 144 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	0.92	0.45
022 242 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	0.46	0.46
022 208 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	0.46	0.19
022 226 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	1,950	cu. yd/day	2.42	0.41	0.92	0.38
TOTAL								3.01

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 3.01

Qty Equipment: 0.11

Grading days/yr: 3.01

Round to	3 grading days/yr
----------	-------------------

Denver Security Operations Center (DSOC) at Buckley AFB, CO

Construction Combustion Emissions

Includes:

50% of Construct DSOC Permanent Facility	90,000 ft ²
50% of Construct Pavement for DSOC Facility	28,000 ft ²

Construction Site Air Emissions

Combustion Emissions of ROG, NOx, SO₂, CO and PM₁₀ Due to Construction

User Inputs:

Total Building Area:	90,000 ft ²	(Construct DSOC Permanent Facility)
Total Paved Area:	28,000 ft ²	(Construct Parking Lot and Sidewalks)
Total Disturbed Area:	2.71 acres	(Construct DSOC Permanent Facility and Pavements)
Construction Duration:	1.0 years	(assumed)
Annual Construction Activity:	230 days/yr	(assumed)

Results:[Average per Year Over the Construction Period]

	ROG	NOx	SO ₂	CO	PM ₁₀
Emissions, lbs/day	54.82	161.56	7.84	147.70	12.28
Emissions, tons/yr	6.30	18.58	0.90	16.98	1.41

Calculation of Unmitigated Emissions

Summary of Input Parameters

	ROG	NOx	SO2	CO	PM10
Total new acres disturbed:	2.71	2.71	2.71	2.71	2.71
Total new acres paved:	0.64	0.64	0.64	0.64	0.64
Total new building space, ft ² :	90,000	90,000	90,000	90,000	90,000
Total years:	1.00	1.00	1.00	1.00	1.00
Area graded, acres in 1 yr:	2.71	2.71	2.71	2.71	2.71
Area paved, acres in 1 yr:	0.64	0.64	0.64	0.64	0.64
Building space, ft ² in 1 yr:	90,000	90,000	90,000	90,000	90,000

Annual Emissions by Source (lbs/day)

	ROG	NOx	SO2	CO	PM10
Grading Equipment	0.7	4.3	0.3	0.9	0.8
Asphalt Paving	0.2	0.0	0.0	0.0	0.0
Stationary Equipment	15.1	12.3	0.8	2.7	0.7
Mobile Equipment	14.4	144.9	6.7	144.1	10.8
Architectural Coatings (Non-Res)	24.5	0.0	0.0	0.0	0.0
Total Emissions (lbs/day):	54.8	161.6	7.8	147.7	12.3

Emission Factors

Reference: Air Quality Thresholds of Significance, SMAQMD, 1994.

Source	SMAQMD Emission Factor				
	ROG	NOx	SO2 *	CO *	PM10
Grading Equipment	2.50E-01 lbs/acre/day	1.60E+00 lbs/acre/day	0.11 lbs/acre/day	0.35 lbs/acre/day	2.80E-01 lbs/acre/day
Asphalt Paving	2.62E-01 lbs/acre/day	NA	NA	NA	NA
Stationary Equipment	1.68E-04 lbs/day/ft ²	1.37E-04 lbs/day/ft ²	9.11E-06 lbs/day/ft ²	2.97E-05 lbs/day/ft ²	8.00E-06 lbs/day/ft ²
Mobile Equipment	1.60E-04 lbs/day/ft ²	1.61E-03 lbs/day/ft ²	7.48E-05 lbs/day/ft ²	0.0016 lbs/day/ft ²	1.20E-04 lbs/day/ft ²
Architectural Coatings (Non-Res)	8.15E-02 lbs/day/ft	NA	NA	NA	NA

* Factors for grading equipment and stationary equipment are calculated from AP-42 for diesel engines using ratios with the NOx factors.
Factors for mobile equipment are calculated from ratios with Mobile5a 2001 NOx emission factors for heavy duty trucks for each site.

Denver Security Operations Center (DSOC) at Buckley AFB, CO**Construction Fugitive Dust Emissions**

Calculation of PM10 Emissions Due to Site Preparation (Uncontrolled).

User Input Parameters / Assumptions

Acres graded per year:	2.71	acres/yr	(From "Combustion" worksheet)
Grading days/yr:	8.89	days/yr	(From "Grading" worksheet)
Exposed days/yr:	90	assumed days/yr	graded area is exposed
Grading Hours/day:	8	hr/day	
Soil piles area fraction:	0.10	(assumed fraction of site area covered by soil piles)	
Soil percent silt, s:	8.5	%	(mean silt content; expected range: 0.5 to 23, AP-42 Table 13.2.2-1)
Soil percent moisture, M:	25	%	(NOAA 2003 http://www.cpc.noaa.gov/products/soilmst/drought_composite.html#CSMRP)
Annual rainfall days, p:	90	days/yr	rainfall exceeds 0.01 inch/day (AP-42 Fig 13.2.2-1)
Wind speed > 12 mph %, I:	16	%	Avg. wind speed at Boulder, CO (ftp://ftp.wcc.nrcs.usda.gov/downloads/climate/windrose/colorado/boulder/)
Fraction of TSP, J:	0.5	(SCAQMD recommendation)	
Mean vehicle speed, S:	5	mi/hr	(On-site)
Dozer path width:	8	ft	
Qty construction vehicles:	0.33	vehicles	(From "Grading" worksheet)
On-site VMT/vehicle/day:	5	mi/veh/day	(Excluding bulldozer VMT during grading)
PM10 Adjustment Factor k	2.6	lb/VMT	(AP-42 Table 13.2.2-2 9/98 for PM10)
PM10 Adjustment Factor a	0.8	(dimensionless)	(AP-42 Table 13.2.2-2 9/98 for PM10)
PM10 Adjustment Factor b	0.4	(dimensionless)	(AP-42 Table 13.2.2-2 9/98 for PM10)
PM10 Adjustment Factor c	0.3	(dimensionless)	(AP-42 Table 13.2.2-2 9/98 for PM10)
Mean Vehicle Weight W	40	tons	assumed for aggregate trucks

Emissions Due to Soil Disturbance ActivitiesOperation Parameters (Calculated from User Inputs)

Grading duration per acre	26.2 hr/acre	
Bulldozer mileage per acre	1 VMT/acre	(Miles traveled by bulldozer during grading)
Construction VMT per day	2 VMT/day	
Construction VMT per acre	5.3 VMT/acre	(Travel on unpaved surfaces within site)

Equations Used (Corrected for PM10)

Operation	Empirical Equation	Units	AP-42 Section (5th Edition)
Bulldozing	$0.75(s^{1.5})/(M^{1.4})$	lbs/hr	Table 11.9-18.24, Overburden
Grading	$(0.60)(0.051)s^{2.0}$	lbs/VMT	Table 11.9-18.24
Vehicle Traffic	$[k(s/12)^a (W/3)^b / (M/0.2)^c] [(365-P)/365]$	lbs/VMT	Section 13.2.2

Source: Compilation of Air Pollutant Emission Factors, Vol. I, USEPA AP-42, Section 11.9 dated 7/98 and Section 13.2 dated 9/98

Calculation of PM10 Emission Factors for Each Operation

Operation	Emission Factor (mass/ unit)	Operation Parameter	Emission Factor (lbs/ acre)
Bulldozing	0.21 lbs/hr	26.2 hr/acre	5.5 lbs/acre
Grading	0.77 lbs/VMT	1 VMT/acre	0.8 lbs/acre
Vehicle Traffic	0.98 lbs/VMT	5.3 VMT/acre	5.2 lbs/acre

Emissions Due to Wind Erosion of Soil Piles and Exposed Graded Surface

Reference: Air Quality Thresholds of Significance, SCAQMD, 1994.

Soil Piles EF = $1.7(s/1.5)[(365 - H)/235](I/15)(J) = (s)(365 - H)(I)(J)/(3110.2941)$, p. A9-99.

Soil Piles EF = 6 lbs/day/acre covered by soil piles

Consider soil piles area fraction so that EF applies to graded area

Soil piles area fraction: 0.10 (Fraction of site area covered by soil piles)

Soil Piles EF = 0.6 lbs/day/acres graded

Graded Surface EF = 26.4 lbs/day/acre (recommended in CEQA Manual, p. A9-93).

Calculation of Annual PM10 Emissions

Source	Emission Factor	Graded Acres/yr	Exposed days/yr	Emissions lbs/yr	Emissions tons/yr
Bulldozing	5.5 lbs/acre	2.71	NA	15	0.01
Grading	0.8 lbs/acre	2.71	NA	2	0.00
Vehicle Traffic	5.2 lbs/acre	2.71	NA	14	0.01
Erosion of Soil Piles	0.6 lbs/acre/day	2.71	90	146	0.07
Erosion of Graded Surface	26.4 lbs/acre/day	2.71	90	6,436	3.22
TOTAL				6,614	3.31

Soil Disturbance EF: 11.5 lbs/acre

Wind Erosion EF: 27 lbs/acre/day

Back calculate to get EF: 274.8 lbs/acre/grading day

Denver Security Operations Center (DSOC) at Buckley AFB, CO**Construction (Grading) Schedule**

Estimate of time required to grade a specified area.

Input Parameters

Construction area 2.71 acres/yr (from "Combustion" Worksheet)
 Qty Equipment: 0.33 (calculated based on acres disturbed)

Assumptions.

Terrain is mostly flat.

An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.

200 hp bulldozers are used for site clearing.

300 hp bulldozers are used for stripping, excavation, and backfill.

Vibratory drum rollers are used for compacting.

Stripping, Excavation, Backfill and Compaction require an average of two passes each.

Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 6th Ed., R. S. Means, 1992.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr	Equip-days per year
021 108 0550	Site Clearing	Dozer & rake, medium brush	0.6	acre/day	0.6	1.67	2.71	4.51
021 144 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	2.71	1.32
022 242 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	1.35	1.37
022 208 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	1.35	0.56
022 226 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	1,950	cu. yd/day	2.42	0.41	2.71	1.12
TOTAL								8.89

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 8.89

Qty Equipment: 0.33

Grading days/yr: 8.89

Round to 9 grading days/yr

Denver Security Operations Center (DSOC) at Buckley AFB, CO

Construction Combustion Emissions

Includes:

50% of Construct DSOC Permanent Facility	90,000 ft ²
50% of Construct Pavement for DSOC Facility	28,000 ft ²

Construction Site Air Emissions

Combustion Emissions of ROG, NOx, SO₂, CO and PM₁₀ Due to Construction

User Inputs:

Total Building Area:	90,000 ft ²	(Construct DSOC Permanent Facility)
Total Paved Area:	28,000 ft ²	(Construct Parking Lot and Sidewalks)
Total Disturbed Area:	2.71 acres	(Construct DSOC Permanent Facility and Pavements)
Construction Duration:	1.0 years	(assumed)
Annual Construction Activity:	230 days/yr	(assumed)

Results:[Average per Year Over the Construction Period]

	ROG	NOx	SO ₂	CO	PM ₁₀
Emissions, lbs/day	54.82	161.56	7.84	147.70	12.28
Emissions, tons/yr	6.30	18.58	0.90	16.98	1.41

Calculation of Unmitigated Emissions

Summary of Input Parameters

	ROG	NOx	SO2	CO	PM10
Total new acres disturbed:	2.71	2.71	2.71	2.71	2.71
Total new acres paved:	0.64	0.64	0.64	0.64	0.64
Total new building space, ft ² :	90,000	90,000	90,000	90,000	90,000
Total years:	1.00	1.00	1.00	1.00	1.00
Area graded, acres in 1 yr:	2.71	2.71	2.71	2.71	2.71
Area paved, acres in 1 yr:	0.64	0.64	0.64	0.64	0.64
Building space, ft ² in 1 yr:	90,000	90,000	90,000	90,000	90,000

Annual Emissions by Source (lbs/day)

	ROG	NOx	SO2	CO	PM10
Grading Equipment	0.7	4.3	0.3	0.9	0.8
Asphalt Paving	0.2	0.0	0.0	0.0	0.0
Stationary Equipment	15.1	12.3	0.8	2.7	0.7
Mobile Equipment	14.4	144.9	6.7	144.1	10.8
Architectural Coatings (Non-Res)	24.5	0.0	0.0	0.0	0.0
Total Emissions (lbs/day):	54.8	161.6	7.8	147.7	12.3

Emission Factors

Reference: Air Quality Thresholds of Significance, SMAQMD, 1994.

Source	SMAQMD Emission Factor				
	ROG	NOx	SO2 *	CO *	PM10
Grading Equipment	2.50E-01 lbs/acre/day	1.60E+00 lbs/acre/day	0.11 lbs/acre/day	0.35 lbs/acre/day	2.80E-01 lbs/acre/day
Asphalt Paving	2.62E-01 lbs/acre/day	NA	NA	NA	NA
Stationary Equipment	1.68E-04 lbs/day/ft ²	1.37E-04 lbs/day/ft ²	9.11E-06 lbs/day/ft ²	2.97E-05 lbs/day/ft ²	8.00E-06 lbs/day/ft ²
Mobile Equipment	1.60E-04 lbs/day/ft ²	1.61E-03 lbs/day/ft ²	7.48E-05 lbs/day/ft ²	0.0016 lbs/day/ft ²	1.20E-04 lbs/day/ft ²
Architectural Coatings (Non-Res)	8.15E-02 lbs/day/ft	NA	NA	NA	NA

* Factors for grading equipment and stationary equipment are calculated from AP-42 for diesel engines using ratios with the NOx factors.
Factors for mobile equipment are calculated from ratios with Mobile5a 2001 NOx emission factors for heavy duty trucks for each site.

Denver Security Operations Center (DSOC) at Buckley AFB, CO**Construction Fugitive Dust Emissions**

Calculation of PM10 Emissions Due to Site Preparation (Uncontrolled).

User Input Parameters / Assumptions

Acres graded per year:	2.71	acres/yr	(From "Combustion" worksheet)
Grading days/yr:	8.89	days/yr	(From "Grading" worksheet)
Exposed days/yr:	90	assumed days/yr	graded area is exposed
Grading Hours/day:	8	hr/day	
Soil piles area fraction:	0.10	(assumed fraction of site area covered by soil piles)	
Soil percent silt, s:	8.5	%	(mean silt content; expected range: 0.5 to 23, AP-42 Table 13.2.2-1)
Soil percent moisture, M:	25	%	(NOAA 2003 http://www.cpc.noaa.gov/products/soilmst/drought_composite.html#CSMRP)
Annual rainfall days, p:	90	days/yr	rainfall exceeds 0.01 inch/day (AP-42 Fig 13.2.2-1)
Wind speed > 12 mph %, I:	16	%	Avg. wind speed at Boulder, CO (ftp://ftp.wcc.nrcs.usda.gov/downloads/climate/windrose/colorado/boulder/)
Fraction of TSP, J:	0.5	(SCAQMD recommendation)	
Mean vehicle speed, S:	5	mi/hr	(On-site)
Dozer path width:	8	ft	
Qty construction vehicles:	0.33	vehicles	(From "Grading" worksheet)
On-site VMT/vehicle/day:	5	mi/veh/day	(Excluding bulldozer VMT during grading)
PM10 Adjustment Factor k	2.6	lb/VMT	(AP-42 Table 13.2.2-2 9/98 for PM10)
PM10 Adjustment Factor a	0.8	(dimensionless)	(AP-42 Table 13.2.2-2 9/98 for PM10)
PM10 Adjustment Factor b	0.4	(dimensionless)	(AP-42 Table 13.2.2-2 9/98 for PM10)
PM10 Adjustment Factor c	0.3	(dimensionless)	(AP-42 Table 13.2.2-2 9/98 for PM10)
Mean Vehicle Weight W	40	tons	assumed for aggregate trucks

Emissions Due to Soil Disturbance ActivitiesOperation Parameters (Calculated from User Inputs)

Grading duration per acre	26.2 hr/acre	
Bulldozer mileage per acre	1 VMT/acre	(Miles traveled by bulldozer during grading)
Construction VMT per day	2 VMT/day	
Construction VMT per acre	5.3 VMT/acre	(Travel on unpaved surfaces within site)

Equations Used (Corrected for PM10)

Operation	Empirical Equation	Units	AP-42 Section (5th Edition)
Bulldozing	$0.75(s^{1.5})/(M^{1.4})$	lbs/hr	Table 11.9-18.24, Overburden
Grading	$(0.60)(0.051)s^{2.0}$	lbs/VMT	Table 11.9-18.24
Vehicle Traffic	$[k(s/12)^a (W/3)^b/(M/0.2)^c] [(365-P)/365]$	lbs/VMT	Section 13.2.2

Source: Compilation of Air Pollutant Emission Factors, Vol. I, USEPA AP-42, Section 11.9 dated 7/98 and Section 13.2 dated 9/98

Calculation of PM10 Emission Factors for Each Operation

Operation	Emission Factor (mass/ unit)	Operation Parameter	Emission Factor (lbs/ acre)
Bulldozing	0.21 lbs/hr	26.2 hr/acre	5.5 lbs/acre
Grading	0.77 lbs/VMT	1 VMT/acre	0.8 lbs/acre
Vehicle Traffic	0.98 lbs/VMT	5.3 VMT/acre	5.2 lbs/acre

Emissions Due to Wind Erosion of Soil Piles and Exposed Graded Surface

Reference: Air Quality Thresholds of Significance, SCAQMD, 1994.

Soil Piles EF = $1.7(s/1.5)[(365 - H)/235](I/15)(J) = (s)(365 - H)(I)(J)/(3110.2941)$, p. A9-99.

Soil Piles EF = 6 lbs/day/acre covered by soil piles

Consider soil piles area fraction so that EF applies to graded area

Soil piles area fraction: 0.10 (Fraction of site area covered by soil piles)

Soil Piles EF = 0.6 lbs/day/acres graded

Graded Surface EF = 26.4 lbs/day/acre (recommended in CEQA Manual, p. A9-93).

Calculation of Annual PM10 Emissions

Source	Emission Factor	Graded Acres/yr	Exposed days/yr	Emissions lbs/yr	Emissions tons/yr
Bulldozing	5.5 lbs/acre	2.71	NA	15	0.01
Grading	0.8 lbs/acre	2.71	NA	2	0.00
Vehicle Traffic	5.2 lbs/acre	2.71	NA	14	0.01
Erosion of Soil Piles	0.6 lbs/acre/day	2.71	90	146	0.07
Erosion of Graded Surface	26.4 lbs/acre/day	2.71	90	6,436	3.22
TOTAL				6,614	3.31

Soil Disturbance EF: 11.5 lbs/acre

Wind Erosion EF: 27 lbs/acre/day

Back calculate to get EF: 274.8 lbs/acre/grading day

Denver Security Operations Center (DSOC) at Buckley AFB, CO**Construction (Grading) Schedule**

Estimate of time required to grade a specified area.

Input Parameters

Construction area 2.71 acres/yr (from "Combustion" Worksheet)
 Qty Equipment: 0.33 (calculated based on acres disturbed)

Assumptions.

Terrain is mostly flat.

An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.

200 hp bulldozers are used for site clearing.

300 hp bulldozers are used for stripping, excavation, and backfill.

Vibratory drum rollers are used for compacting.

Stripping, Excavation, Backfill and Compaction require an average of two passes each.

Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 6th Ed., R. S. Means, 1992.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr	Equip-days per year
021 108 0550	Site Clearing	Dozer & rake, medium brush	0.6	acre/day	0.6	1.67	2.71	4.51
021 144 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	2.71	1.32
022 242 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	1.35	1.37
022 208 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	1.35	0.56
022 226 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	1,950	cu. yd/day	2.42	0.41	2.71	1.12
TOTAL								8.89

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 8.89

Qty Equipment: 0.33

Grading days/yr: 8.89

Round to 9 grading days/yr

METROPOLITAN DENVER INTERSTATE AQCR
Denver Security Operations Center (DSOC) at Buckley AFB, CO

STATE	COUNTY	NOx (tpy)		VOC (tpy)		CO (tpy)		SO2 (tpy)		PM10 (tpy)	
		AREA SOURCES	POINT SOURCES	AREA SOURCES	POINT SOURCES	AREA SOURCES	POINT SOURCES	AREA SOURCES	POINT SOURCES	AREA SOURCES	POINT SOURCES
CO	Adams Co	14,197	15,841	16,066	5,727	119,118	2,297	12,625	2,048	833	21,683
CO	Arapahoe Co	14,742	746	22,080	2,247	157,386	595	13,009	522	948	68
CO	Boulder Co	9,021	3,223	12,739	1,918	92,970	455	6,522	969	569	3,005
CO	Clear Creek Co	1,754	54	1,335	39	16,935	72	1,796	75	69	4
CO	Denver Co	22,980	5,234	27,565	3,259	205,510	956	9,642	590	1,587	4,243
CO	Douglas Co	9,389	50	8,667	408	93,353	140	7,229	231	506	83
CO	Gilpin Co	639	0	540	0	4,573	0	987	0	40	0
CO	Jefferson Co	16,031	2,601	23,836	3,236	176,676	799	8,183	611	897	2,859
		88,753	27,749	112,828	16,834	866,521	5,314	59,993	5,046	5,449	31,945

METROPOLITAN DENVER INTERSTATE AQCR TOTAL EMISSIONS

NOx	VOC	CO	SO2	PM10
116,502	129,662	871,835	65,039	37,394

SOURCE:

<http://www.epa.gov/air/data/nettier.html>

USEPA - AirData NET Tier Report

*Net Air pollution sources (area and point) in tons per year (1999)

Site visited on March 9, 2004

Privately-Owned Vehicle Emissions Denver Security Operations Center (DSOC) at Buckley AFB, CO

As described in Section 2.3 of the DOPAA, the proposed program manpower authorizations would be an additional 350 military and civilian personnel. This worksheet estimates the additional privately-owned vehicle commuting emissions expected to result from the Proposed Action.

In general, POV emissions tend to decline as the fleet is replaced with later-model vehicles that have been manufactured to lower emission standards. For this analysis, the impacts of POVs have been estimated for 2005, the earliest year when most of the additional Proposed Action new staff are expected to be on Base.

Step 1 Estimate the Vehicle Miles Traveled (VMT) by Vehicle Class

For this analysis, we have assumed that the commuter fleet corresponding to these additional employees will reflect the passenger vehicle fleet on the roads in the vicinity of Buckley AFB. The passenger care VMT data for Arapahoe County Colorado, as compiled by U.S. EPA for traffic emissions modeling, were used.

Arapahoe County Passenger Vehicle VMT Mix

VClassId	VMT	Vehicle Class	Mix
1	2,335.76	LDGV	68.61%
2	184.10	LDGT1	5.41%
3	612.88	LDGT2	18.00%
4	262.16	LDGT3	7.70%
24	9.48	MC	0.28%
<i>Total (mi/day)</i>		3,404.386	

Assumptions Used To Estimate Mileage

1.2	Riders per vehicle
40	Miles avg. commute round trip
50%	Vehicles do daytime errands/lunch
10	Miles avg. errand/lunch round trip
230	Working Days Per Year
350	New Personnel

Source for VMT Mix: National Mobile Inventory Model (NMIM) county-level database of NONROAD and MOBILE6 National Emission Inventory (NEI) 2002. ftp://ftp.epa.gov/EmissionInventory/prelim2002nei/mobile/nmim_related/

POV Vehicle Miles Traveled Assumed for This Estimate

Description of Vehicle Class	Vehicle Class	POV VMT %	POV Annual Miles
Light-duty gasoline vehicles (passenger cars)	LDGV	68.61%	2,071,171
Light-duty gasoline trucks (SUVs, pickups GVWR 0-6000 lbs, LVW 0-3750 lbs)	LDGT1	5.41%	163,248
Light-duty gasoline trucks (GVWR 0-6000 lbs, LVW 3751-5750 lbs)	LDGT2	18.00%	543,460
Light-duty gasoline trucks (GVWR 6001-8500 lbs, ALVW 0-5750 lbs)	LDGT3	7.70%	232,467
Motorcycles	MC	0.28%	8,404
		100%	3,018,750

Step 2 Select the Appropriate Air Pollutant Emission Factors (grams per mile) for the POV Fleet**Emission Factors**

Emission factors are taken from the U.S. EPA MOBIL5 emissions model, as compiled and published in "Air Emissions Inventory Guidance Document for Mobile Sources and Air Force Installations" Air Force Institute for Environmental Safety and Occupational Health Risk Analysis (AFIERA), July 2001.

All vehicle emissions are calculated assuming that the average commute vehicle is five years old. That is calendar year 2005 emissions estimates assume that the average vehicle in each vehicle class is a 2000 model.

Note that PM10 emission factors include both exhaust and "fugitive" emissions (paved road, brake & tire dust, etc.).

Emission Factors in g/mi from MOBILE5 Tables for 2000 Model Year Vehicles in CY2005.

	POV Low Altitude g/mi - 2005				
	NOx	VOC	CO	SO2	PM10
LDGV	1.0	1.0	14.6	0.072	0.71
LDGT1	1.1	1.2	16.2	0.096	1.08
LDGT2	1.1	1.2	16.2	0.096	1.08
LDGT3	1.2	1.2	16.9	0.098	2.58
MC	0.9	4.7	22.1	0.032	0.08

Reference: Tables 4-2 through 4-53, (AF IERA, July 2001)

Notes:

LDGT1 and LDGT2 emission factors shown above were taken from AF IERA LDGT1 (0-6000 lbs) emission factors

LDGT3 emission factors shown above were taken from AF IERA LDGT2 (6001-8500 lbs) emission factors

Step 3 Multiply the Emission Factors Times the Annual Vehicle Miles Traveled for Each Vehicle Class

(and convert from grams to tons)

	POV Emissions by Vehicle Class- 2005				
	NOx	VOC	CO	SO2	PM10
LDGV	2.283	2.283	33.332	0.164	1.621
LDGT1	0.198	0.216	2.915	0.017	0.194
LDGT2	0.659	0.719	9.705	0.058	0.647
LDGT3	0.307	0.307	4.331	0.025	0.661
MC	0.008	0.044	0.205	0.000	0.001
Total	3.456	3.569	50.49	0.265	3.124

Air Quality Emission Calculations for Denver Security Operations Center (DSOC) at Buckley AFB, CO

BaseYear	VClass	RoadType	FIPSCountyId	FIPSSStateId	VMT	
2002	1	11	5	8	78.1781	
2002	1	13	5	8	0	
2002	1	15	5	8	15.0513	
2002	1	17	5	8	12.5984	
2002	1	19	5	8	0	
2002	1	21	5	8	7.7796	
2002	1	23	5	8	402.125	
2002	1	25	5	8	106.9077	
2002	1	27	5	8	1158.6795	
2002	1	29	5	8	164.4185	
2002	1	31	5	8	139.5408	
2002	1	33	5	8	250.4776	2335.757
2002	2	11	5	8	7.8655	
2002	2	13	5	8	0	
2002	2	15	5	8	1.5306	
2002	2	17	5	8	1.3878	
2002	2	19	5	8	0	
2002	2	21	5	8	0.8786	
2002	2	23	5	8	33.7496	
2002	2	25	5	8	11.1807	
2002	2	27	5	8	88.5122	
2002	2	29	5	8	11.1004	
2002	2	31	5	8	9.8405	
2002	2	33	5	8	18.0569	184.1028
2002	3	11	5	8	26.1846	
2002	3	13	5	8	0	
2002	3	15	5	8	5.0953	
2002	3	17	5	8	4.6199	
2002	3	19	5	8	0	
2002	3	21	5	8	2.925	
2002	3	23	5	8	112.3536	
2002	3	25	5	8	37.2208	
2002	3	27	5	8	294.6607	
2002	3	29	5	8	36.9537	
2002	3	31	5	8	32.7594	
2002	3	33	5	8	60.1119	612.8849
2002	4	11	5	8	11.3779	
2002	4	13	5	8	0	
2002	4	15	5	8	2.1751	
2002	4	17	5	8	1.9725	
2002	4	19	5	8	0	
2002	4	21	5	8	1.2489	
2002	4	23	5	8	47.9813	
2002	4	25	5	8	15.893	
2002	4	27	5	8	126.0283	
2002	4	29	5	8	15.7991	

Air Quality Emission Calculations for Denver Security Operations Center (DSOC) at Buckley AFB, CO

BaseYear	VClass	RoadType	FIPSCountyId	FIPSSStateId	VMT	
2002	4	31	5	8	14.0009	262.1639
2002	4	33	5	8	25.6869	
2002	5	11	5	8	5.2322	120.5575
2002	5	13	5	8	0	
2002	5	15	5	8	1.0002	
2002	5	17	5	8	0.907	
2002	5	19	5	8	0	
2002	5	21	5	8	0.5743	
2002	5	23	5	8	22.0646	
2002	5	25	5	8	7.3085	
2002	5	27	5	8	57.9549	
2002	5	29	5	8	7.2653	
2002	5	31	5	8	6.4383	
2002	5	33	5	8	11.8122	
2002	6	11	5	8	10.8517	
2002	6	13	5	8	0	
2002	6	15	5	8	0.4513	64.1728
2002	6	17	5	8	0.4338	
2002	6	19	5	8	0	
2002	6	21	5	8	0.2797	
2002	6	23	5	8	13.4965	
2002	6	25	5	8	3.5775	
2002	6	27	5	8	26.8362	
2002	6	29	5	8	3.3454	
2002	6	31	5	8	1.8061	
2002	6	33	5	8	3.0946	
2002	7	11	5	8	0.3963	
2002	7	13	5	8	0	
2002	7	15	5	8	0.0164	2.4319
2002	7	17	5	8	0.0158	
2002	7	19	5	8	0	
2002	7	21	5	8	0.0102	
2002	7	23	5	8	0.5158	
2002	7	25	5	8	0.1367	
2002	7	27	5	8	1.0256	
2002	7	29	5	8	0.1278	
2002	7	31	5	8	0.0691	
2002	7	33	5	8	0.1182	
2002	8	11	5	8	0.217	
2002	8	13	5	8	0	
2002	8	15	5	8	0.009	
2002	8	17	5	8	0.0087	
2002	8	19	5	8	0	
2002	8	21	5	8	0.0056	
2002	8	23	5	8	0.2824	

Air Quality Emission Calculations for Denver Security Operations Center (DSOC) at Buckley AFB, CO

BaseYear	VClass	RoadType	FIPSCountyId	FIPSStateId	VMT	
2002	8	25	5	8	0.0749	1.3316
2002	8	27	5	8	0.5615	
2002	8	29	5	8	0.07	
2002	8	31	5	8	0.0378	
2002	8	33	5	8	0.0647	
2002	9	11	5	8	0.4596	
2002	9	13	5	8	0	
2002	9	15	5	8	0.019	
2002	9	17	5	8	0.0184	
2002	9	19	5	8	0	
2002	9	21	5	8	0.0118	
2002	9	23	5	8	0.5981	2.8202
2002	9	25	5	8	0.1585	
2002	9	27	5	8	1.1893	
2002	9	29	5	8	0.1483	
2002	9	31	5	8	0.08	
2002	9	33	5	8	0.1372	
2002	10	11	5	8	0.9856	
2002	10	13	5	8	0	
2002	10	15	5	8	0.041	
2002	10	17	5	8	0.0394	
2002	10	19	5	8	0	
2002	10	21	5	8	0.0254	6.0501
2002	10	23	5	8	1.2832	
2002	10	25	5	8	0.3401	
2002	10	27	5	8	2.5514	
2002	10	29	5	8	0.3181	
2002	10	31	5	8	0.1717	
2002	10	33	5	8	0.2942	
2002	11	11	5	8	0.4611	
2002	11	13	5	8	0	
2002	11	15	5	8	0.0192	
2002	11	17	5	8	0.0184	
2002	11	19	5	8	0	
2002	11	21	5	8	0.0119	2.8298
2002	11	23	5	8	0.6002	
2002	11	25	5	8	0.1591	
2002	11	27	5	8	1.1933	
2002	11	29	5	8	0.1487	
2002	11	31	5	8	0.0803	
2002	11	33	5	8	0.1376	
2002	12	11	5	8	0.0015	
2002	12	13	5	8	0	
2002	12	15	5	8	0.0001	
2002	12	17	5	8	0.0001	

Air Quality Emission Calculations for Denver Security Operations Center (DSOC) at Buckley AFB, CO

BaseYear	VClass	RoadType	FIPSCountyId	FIPSSStateId	VMT	
2002	12	19	5	8	0	
2002	12	21	5	8	0.0001	
2002	12	23	5	8	0.002	
2002	12	25	5	8	0.0005	
2002	12	27	5	8	0.0038	
2002	12	29	5	8	0.0005	
2002	12	31	5	8	0.0002	
2002	12	33	5	8	0.0004	0.0092
2002	13	11	5	8	0	
2002	13	13	5	8	0	
2002	13	15	5	8	0	
2002	13	17	5	8	0	
2002	13	19	5	8	0	
2002	13	21	5	8	0	
2002	13	23	5	8	0	
2002	13	25	5	8	0	
2002	13	27	5	8	0	
2002	13	29	5	8	0	
2002	13	31	5	8	0	
2002	13	33	5	8	0	0
2002	14	11	5	8	0.3904	
2002	14	13	5	8	0	
2002	14	15	5	8	0.018	
2002	14	17	5	8	0.0157	
2002	14	19	5	8	0	
2002	14	21	5	8	0.0098	
2002	14	23	5	8	0.4594	
2002	14	25	5	8	0.1318	
2002	14	27	5	8	1.2497	
2002	14	29	5	8	0.1697	
2002	14	31	5	8	0.1429	
2002	14	33	5	8	0.2578	2.8452
2002	15	11	5	8	0.0242	
2002	15	13	5	8	0	
2002	15	15	5	8	0.0038	
2002	15	17	5	8	0.0038	
2002	15	19	5	8	0	
2002	15	21	5	8	0.0024	
2002	15	23	5	8	0.0729	
2002	15	25	5	8	0.023	
2002	15	27	5	8	0.1984	
2002	15	29	5	8	0.0269	
2002	15	31	5	8	0.0227	
2002	15	33	5	8	0.0409	0.419
2002	16	11	5	8	4.0558	

Air Quality Emission Calculations for Denver Security Operations Center (DSOC) at Buckley AFB, CO

BaseYear	VClass	RoadType	FIPSCountyId	FIPSSStateId	VMT	
2002	16	13	5	8	0	20.8796
2002	16	15	5	8	0.1462	
2002	16	17	5	8	0.1402	
2002	16	19	5	8	0	
2002	16	21	5	8	0.0903	
2002	16	23	5	8	4.2872	
2002	16	25	5	8	1.1399	
2002	16	27	5	8	8.383	
2002	16	29	5	8	1.0571	
2002	16	31	5	8	0.5827	
2002	16	33	5	8	0.9972	
2002	17	11	5	8	1.2294	6.5613
2002	17	13	5	8	0	
2002	17	15	5	8	0.0443	
2002	17	17	5	8	0.0425	
2002	17	19	5	8	0	
2002	17	21	5	8	0.0273	
2002	17	23	5	8	1.3602	
2002	17	25	5	8	0.3616	
2002	17	27	5	8	2.6595	
2002	17	29	5	8	0.3353	
2002	17	31	5	8	0.1848	
2002	17	33	5	8	0.3164	
						5.5607
2002	18	11	5	8	1.0419	
2002	18	13	5	8	0	
2002	18	15	5	8	0.0376	
2002	18	17	5	8	0.036	
2002	18	19	5	8	0	
2002	18	21	5	8	0.0232	
2002	18	23	5	8	1.1526	
2002	18	25	5	8	0.3065	
2002	18	27	5	8	2.2539	
2002	18	29	5	8	0.2843	
2002	18	31	5	8	0.1566	
2002	18	33	5	8	0.2681	
2002	19	11	5	8	0.4568	
2002	19	13	5	8	0	
2002	19	15	5	8	0.0164	
2002	19	17	5	8	0.0158	
2002	19	19	5	8	0	
2002	19	21	5	8	0.0102	
2002	19	23	5	8	0.5053	
2002	19	25	5	8	0.1343	
2002	19	27	5	8	0.9882	
2002	19	29	5	8	0.1246	
2002	19	31	5	8	0.0687	

Air Quality Emission Calculations for Denver Security Operations Center (DSOC) at Buckley AFB, CO

BaseYear	VClass	RoadType	FIPSCountyId	FIPSStateId	VMT	
2002	19	33	5	8	0.1175	2.4378
2002	20	11	5	8	2.5701	
2002	20	13	5	8	0	
2002	20	15	5	8	0.0927	
2002	20	17	5	8	0.0889	
2002	20	19	5	8	0	
2002	20	21	5	8	0.0572	
2002	20	23	5	8	2.843	
2002	20	25	5	8	0.7559	
2002	20	27	5	8	5.5591	
2002	20	29	5	8	0.701	
2002	20	31	5	8	0.3864	
2002	20	33	5	8	0.6613	
2002	21	11	5	8	3.8532	13.7156
2002	21	13	5	8	0	
2002	21	15	5	8	0.1389	
2002	21	17	5	8	0.1332	
2002	21	19	5	8	0	
2002	21	21	5	8	0.0858	
2002	21	23	5	8	4.2627	
2002	21	25	5	8	1.1334	
2002	21	27	5	8	8.3354	
2002	21	29	5	8	1.0511	
2002	21	31	5	8	0.5793	
2002	21	33	5	8	0.9915	
2002	22	11	5	8	4.9449	20.5645
2002	22	13	5	8	0	
2002	22	15	5	8	0.1782	
2002	22	17	5	8	0.1709	
2002	22	19	5	8	0	
2002	22	21	5	8	0.1101	
2002	22	23	5	8	5.1638	
2002	22	25	5	8	1.373	
2002	22	27	5	8	10.0973	
2002	22	29	5	8	1.2733	
2002	22	31	5	8	0.7018	
2002	22	33	5	8	1.2011	
2002	23	11	5	8	17.6227	25.2144
2002	23	13	5	8	0	
2002	23	15	5	8	0.6351	
2002	23	17	5	8	0.6091	
2002	23	19	5	8	0	
2002	23	21	5	8	0.3924	
2002	23	23	5	8	18.4034	
2002	23	25	5	8	4.8932	

Air Quality Emission Calculations for Denver Security Operations Center (DSOC) at Buckley AFB, CO

BaseYear	VClass	RoadType	FIPSCountyId	FIPSSStateId	VMT	
2002	23	27	5	8	35.9854	89.8606
2002	23	29	5	8	4.5379	
2002	23	31	5	8	2.5009	
2002	23	33	5	8	4.2805	
2002	24	11	5	8	0.5629	9.4755
2002	24	13	5	8	0	
2002	24	15	5	8	0.0756	
2002	24	17	5	8	0.0658	
2002	24	19	5	8	0	
2002	24	21	5	8	0.0412	
2002	24	23	5	8	1.6633	
2002	24	25	5	8	0.4769	
2002	24	27	5	8	4.5245	
2002	24	29	5	8	0.6145	
2002	24	31	5	8	0.5175	
2002	24	33	5	8	0.9333	
2002	25	11	5	8	0.1842	
2002	25	13	5	8	0	
2002	25	15	5	8	0.0077	
2002	25	17	5	8	0.0074	
2002	25	19	5	8	0	2.0087
2002	25	21	5	8	0.0048	
2002	25	23	5	8	0.2568	
2002	25	25	5	8	0.0681	
2002	25	27	5	8	0.5107	
2002	25	29	5	8	0.0637	
2002	25	31	5	8	0.0344	
2002	25	33	5	8	0.0589	
2002	26	11	5	8	0.3562	
2002	26	13	5	8	0	
2002	26	15	5	8	0.0128	
2002	26	17	5	8	0.0123	
2002	26	19	5	8	0	
2002	26	21	5	8	0.0079	
2002	26	23	5	8	0.4222	
2002	26	25	5	8	0.1122	
2002	26	27	5	8	0.8254	
2002	26	29	5	8	0.1041	
2002	26	31	5	8	0.0574	
2002	26	33	5	8	0.0982	
2002	27	11	5	8	0.5272	
2002	27	13	5	8	0	
2002	27	15	5	8	0.019	
2002	27	17	5	8	0.0182	
2002	27	19	5	8	0	

Air Quality Emission Calculations for Denver Security Operations Center (DSOC) at Buckley AFB, CO

BaseYear	VClass	RoadType	FIPSCountyId	FIPSSStateId	VMT	
2002	27	21	5	8	0.0117	
2002	27	23	5	8	0.6247	
2002	27	25	5	8	0.1662	
2002	27	27	5	8	1.2215	
2002	27	29	5	8	0.154	
2002	27	31	5	8	0.0849	
2002	27	33	5	8	0.1453	2.9727
2002	28	11	5	8	0.1644	
2002	28	13	5	8	0	
2002	28	15	5	8	0.0261	
2002	28	17	5	8	0.0257	
2002	28	19	5	8	0	
2002	28	21	5	8	0.0166	
2002	28	23	5	8	0.4966	
2002	28	25	5	8	0.157	
2002	28	27	5	8	1.3507	
2002	28	29	5	8	0.1835	
2002	28	31	5	8	0.1545	
2002	28	33	5	8	0.2787	2.8538

Air Quality Emission Calculations for Denver Security Operations Center (DSOC) at Buckley AFB, CO

DieselId	DieselSulfur
1	500
3	2700

NGId	NGSulfur
1	30

Gasoline Id	RVP	GasSulfur	GasMaxSulfur	RVPOxy Waiver	ETOH Volume	ETOHMkt Share	MTBE Volume	MTBEMkt Share	ETBE Volume	ETBEMkt Share	TAME Volume	TAMEMkt Share	Aromatic Content	OlefinContent	Benzene Content	E200	E300	RFG
122	14	330.69	1000	1	9.9	0.3974	1.3	0.6026	0	0	0	0	24	8.8	1.1	56.3	83.2	N
123	11.8	344.57	1000	1	10	0.3974	2.6	0.6026	0	0	0	0	26.1	9	1.1	53.7	81.8	N
124	8.9	363.08	1000	1	10.1	0.3974	4.4	0.6026	0	0	0	0	28.9	9.1	1.1	50.3	79.9	N

PSCounty	County
57	Greene
113	Montgomery

Vclass	Vehicle Class	Vtype
1	LDGV	1
2	LDGT1	2
3	LDGT2	3
4	LDGT3	4
5	LDGT4	5
6	HDGV2B	6
7	HDGV3	7
8	HDGV4	8
9	HDGV5	9
10	HDGV6	10
11	HDGV7	11
12	HDGV8A	12
13	HDGV8B	13
14	LDDV	1
15	LDDT12	3
16	HDDV2B	6
17	HDDV3	7
18	HDDV4	8
19	HDDV5	9
20	HDDV6	10
21	HDDV7	11
22	HDDV8A	12
23	HDDV8B	13
24	MC	16
25	HDGB	14
26	HDDBT	15
27	HDDBS	14
28	LDDT34	5

RoadType	Description
11	Interstate: Rural
13	Other Principal Arterial: Rural
15	Minor Arterial: Rural
17	Major Arterial: Rural
19	Minor Collector: Rural
21	Local: Rural
23	Interstate: Urban
25	Other Freeways and Expressways: Urban
27	Other Principal Arterial: Urban
29	Minor Arterial: Urban
31	Collector: Urban
33	Local: Urban

